SONY

TRINITRON COLOUR VIDEO MONITOR

BVM-1301P/PM

OPERATION AND MAINTENANCE MANUAL

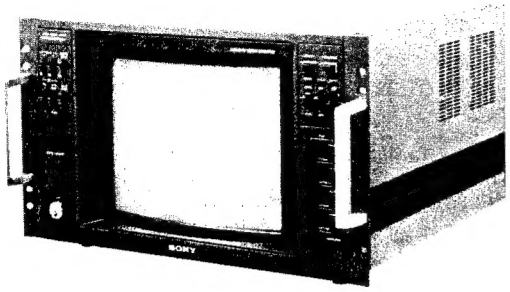
2nd Edition

Serial No. 11001 and Higher

SONY

TRINITRON® COLOUR VIDEO MONITOR

BVM-1301P/PM



SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

CAUTION!!

DO NOT USE THE EXTERNAL DEGAUSSER TO DEMAGNETIZE THE SCREEN.
BE SURE TO USE THE DEGAUSS SWITCH ON THE FRONT PANEL.

THE BVM-1301P AND BVM-1301PM ARE IDENTICAL IN OPERATING PROCEDURES. CHARACTERISTICS, ADJUSTMENT, ETC. MAY SOMEWHAT DIFFER.

OPERATION AND MAINTENANCE MANUAL

This revised edition includes every information of Serial No. 11,001 and later.

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INHALTSVERZEICHNIS

SECTION 1
OPERATION

1-1. FEATURES

- This monitor uses the finer picture tube whose resolution is approximately 2.4 times as high as that of our conventional picture tube.
- This monitor is equipped with the composite video A, B, the R. G. B. and TEST inputs, which are selected with the INPUT select switch.
- An internal or an external synchronization is available by switching the SYNC select switch.
  Furthermore, if a composite sync signal is contained within the G-channel input signal, this monitor can be operated with the internal sync.
- This monitor employs two color modes, AUTO and B/W. In the AUTO mode, color or B/W mode is automatically selected by detecting the color burst presence.
  In the B/W mode, chroma channel is deactivated and the picture is always displayed in B/W mode.
- The synchronizing signal can be displayed on the screen.
  When the H DELAY switch is turned on, the horizontal sync is displayed in left approximately one-fourth of screen.
  When the V DELAY switch is turned on, the vertical sync is displayed near the center of screen, expanded on the screen by approximately 3 times.
  If both the H and V DELAY switches are activated, the pulse cross display is shown on the screen. At this time, vertical sync expansion is cancelled by activating the UNDERSCAN switch.
- The AFC switch is provided to select the horizontal AFC time constant, FAST or SLOW. The SLOW mode is used to monitor the jitter from the VTR.
- The tally lamp which consists of seven LED segments displays the figure from 0 to 9.
  Furthermore, the tally lamp can be turned on by remote control with the rear TALLY-REMOTE connector short-circuited.
- The left front panel can be pulled out. On this panel, the linearity, convergence and other controls are located for easier adjustments.
- Overdrive protection circuit is provided to protect the picture tube from damage caused by the troubles such as in the deflection system.
- If the composite video or composite sync signal is applied to the VIDEO A (or B), or EXT SYNC connectors respectively, the crosshatch pattern, synchronized to the signal, can be displayed on the screen by setting the CROSS HATCH switch, located on the panel pulled out to ON.
- The arms and the slide rails can be attached to this monitor left and right sides. These attachments enable this monitor to be mounted in an EIA standard 19-inch rack.
- The R-Y and B-Y demodulated chroma output enables the unit to provide vector displays.
- The CCD (Charge-Coupled Device) is employed in the circuit of the 1H delay line, realizing less distortion than the conventional glass delay line.

1-2. SPECIFICATIONS

System	BVM-1301P: 625 lines per picture, 50 fields per second interlaced, PAL BVM-1301PM: 525 lines per picture, 60 fields per second interlaced, PAL-M
Power consumption	Typical: 136 watts Maximum: 160 watts
Line voltage	The line voltage is switchable between 100, 120, 220, 240 volts. Each line voltage within ± 10%
Inputs performance	
Connectors	BNCs
R.G.B. **VIDEO inputs** **TEST**	0.7 Vp-p non-composite or 1 Vp-p composite video signal ±6 dB positive, loop through, high impedance.
EXT SYNC inputs	1 – 8 Vp-p negative, loop through, high impedance.
Return loss	At least 46 dB to 5 MHz with 75 Ohm termination. (not internally terminated)
Maximum safe input DC	±5 volts
Hum rejection	Hum is at least 50 dB down and maximum hum is less than 4 Vrms, where hum is applied to the monitor in floating ground mode.
RGB performance	
Differential gain	Within 2% for a luminance from zero to 20 FL
Differential phase	Within 2 degrees for a luminance from zero to 20 FL
Frequency response	100 Hz to 8 MHz ±1 dB
DC restoration	Back porch type Back porch level within 1% of peak luminance from 10% to 90% APL.
Synchronization	
AFC Slow	Weighting factor is more than 5 from 2 Hz to 100 Hz.
Fast	Weighting factor is less than 1 upto 2 Hz 2 upto 10 Hz 3 upto 500 Hz 4 upto 10 kHz
Line pull range/ **Line hold range**	More than ±500 Hz at fast time constant
Vertical blanking time	
Normal	Within 1.3 msec. (PAL) Within 1.0 msec. (PAL-M)
Underscan	Within 0.8 msec.
Horizontal retrace time	Within 10 micro-sec.

Picture performance

Height	182 mm
Width	239 mm
Underscan	Approximately 10% reduction
Linearity	Within a central area bounded by a circle whose diameter equals the picture height, within 1% of the picture height
Color temperature	6500 degrees K, adjustable to other standards
Nominal chromaticity co-ordinates	The EBU standard requirements are satisfied.
Convergence error	Less than ±1 mm within the central area Outside of the central area, less than ±2 mm
Calibrated contrast	20 FL at peak white of standard 1 Vp-p signal.
Raster size stability	Less than 1% picture height, zero to 100 APL (Average Picture Level) at 20 FL peak luminance
Scan delay	
Horizontal delay	Approximately 1/4 line.
Vertical delay	Approximately one half field, vertical scan is expanded unless underscan is activated.
Resolution	Minimum, 600 TV lines center at 20 FL luminance

Environment

Operating ambient temperature	Zero to +40 degrees C
Satisfied specification ambient temperature	20 to 30 degrees C
Humidity	Zero to 90% Non-condensing
Altitude	10,000 feet

General

Picture tube protection	EHT (Extremely High Tension) is protected in the event of scan failure.
Warm up	30 minutes to meet specification
Heater voltage	Regulated DC
Anode voltage	Properly adjusted HV 20 kV at zero beam current

Physical characteristics

Dimensions

	Cabinet	Rackmount
Height	276 mm	266 mm
Width	424 mm	480 mm
Depth (without arms)	454 mm	454 mm

Weight

Net weight	26 kg	27.5 kg

Notes:
- When the AC power cord and the remote terminal are used, depth of dimension is 545 mm.
- This monitor has the arms for rack mounting.
- It is possible to remove the bottom feet from the cabinet when rack mounting.
- For details of the dimensions, refer to "1-6. RACK MOUNTING".

PAL performance

Luminance channel

Differential gain	Within 2% for a luminance from zero to 20 FL
Differential phase	Within 2 degrees for a luminance from zero to 20 FL
Frequency response	Monochrome mode. 100 Hz to 6.5 MHz ±1 dB. (aperture correction at zero) Color mode Notch filter removes frequency in 4.43 MHz region.

Chrominance channel

Demodulation axis	R-Y, B-Y
Bandpass	1.3 MHz equiband
Subcarrier regeneration	±1 degree (standard input signal)
Phase range	More than ± 10 degrees (standard input signal)
Color range	Preset at zero dB More than ±6 dB

Chrominance/luminance

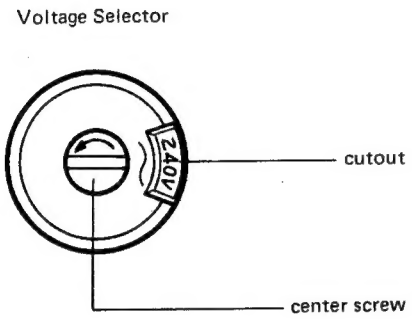
Time error	Less than 40 nsec
Gain error	Less than 5%
Aperture correction	A continuously adjustable front panel control provides up to 8 dB boost at 4.5 MHz
DC restoration	Back porch type back porch level within 1% of peak luminance from 10% to 90% APL.

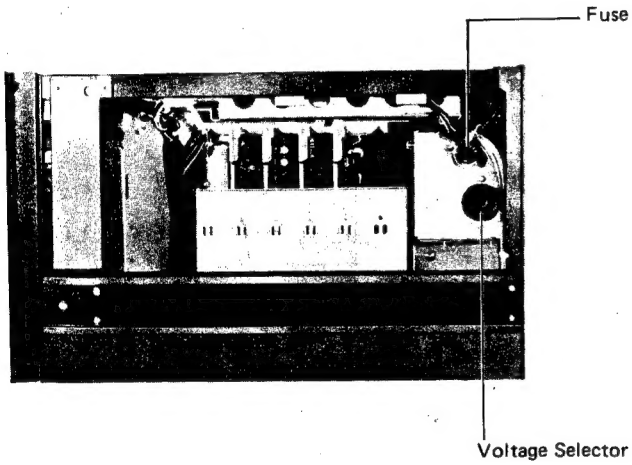
1-3. VOLTAGE SELECTION

The operating voltage of the BVM-1301P is factory-preset to 240V ac and the BVM-1301PM is preset to 220V ac. The voltage may be reset to 100V, 120V, 220V or 240V ac.
The Voltage Selector, located inside the cabinet at the right side, can be reset as follows.

Before proceeding, be sure that the AC power cord is disconnected from the ac outlet.
Remove the center screw by turning it counterclockwise with a screwdriver. Then pull out the Voltage Selector and reinsert it so that the proper voltage figure appears at the cutout. Finally fasten the original center screw.

- Use the 3.15 A fuse for 100 V or 120 V setting, and 1.6 A fuse for 220 V or 240 V setting.



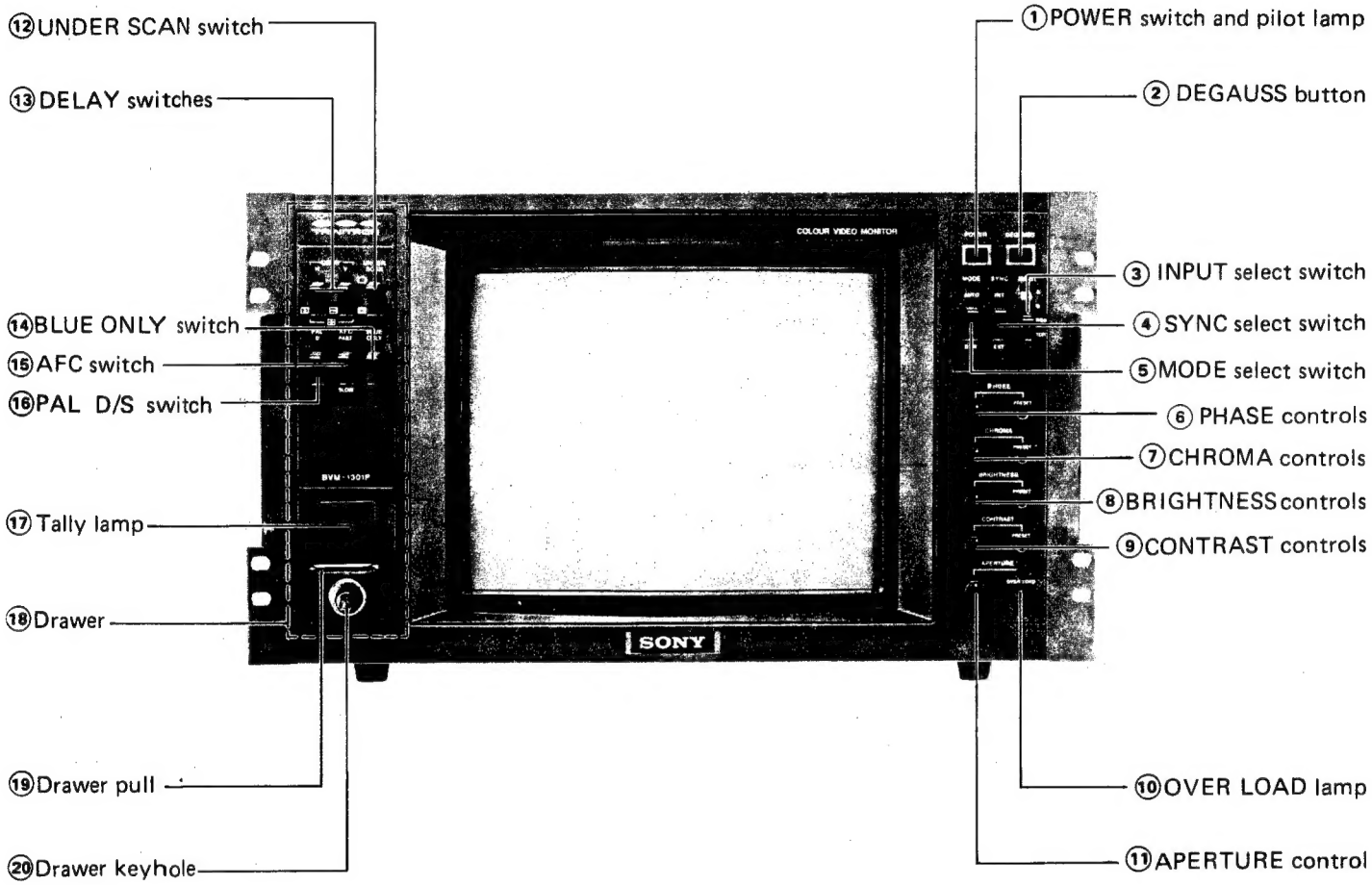


1-4. INSTALLATION INSTRUCTIONS

- Install this monitor in a location which is dry and well ventilated.
- Avoid installation in a room with a high temperature or near a heat source.
- Avoid installation in dusty areas or areas which are subjected to vibration.
- Avoid areas where high electric or magnetic fields are to be found.
- Avoid areas where this monitor will be exposed to direct sunlight, other strong lights or flashes of light.

1-5. OPERATION CONTROLS

1-5-1. Front panel



① **POWER switch and pilot lamp**

② **DEGAUSS button**
This button is used to demagnetize the screen. Depress this button for about 10 seconds after the power has been applied.

③ **INPUT select switch**
A: For the signal connected to the VIDEO A connectors.
B: For the signal connected to the VIDEO B connectors.
RGB: For the signals connected to the R, G and B connectors.
TEST: For the signal connected to the TEST connector.

④ **SYNC select switch**
INT: When composite video is supplied without external sync.
EXT: When an external composite sync signal is supplied from an external sync generator.

⑤ **MODE select switch**
AUTO: Color or B/W mode is automatically selected according to the color burst presence or absence.
B/W: Chroma channel is deactivated and the picture is displayed in B/W mode.

⑥ **PHASE controls (for PAL-S system only)**
Left PHASE control allows the hue angle to be adjusted.
Fully counterclockwise locked position provides the factory preset level. To fine-adjust the preset level, use the right PRESET control. Further level adjustment is possible by turning the left control clockwise.

⑦ **CHROMA controls**
Left CHROMA control allows the color saturation to be adjusted. The use of the left control and the right PRESET control is the same as the ⑥ PHASE controls.

⑧ **BRIGHTNESS controls**
Left BRIGHTNESS control allows the picture brightness (dc level) to be adjusted.
The use of the left control and the right PRESET control is the same as the ⑥ PHASE controls.

⑨ **CONTRAST controls**
Left CONTRAST control allows the picture contrast to be adjusted. The use of the left control and the right PRESET control is the same as the ⑥ PHASE controls.

⑩ **OVER LOAD lamp**
This lamp illuminates to warn the over load when the overdrive protection circuit is in operation.

⑪ **APERTURE control**
This control allows the frequency response to be adjusted.
Fully counterclockwise locked position provides the factory preset level.

⑫ **UNDER SCAN switch**
This switch selects the normal scanning or underscanning.
Underscanning reduces display size by about 10%. When the V DELAY is activated, this switch cancels the vertical sync expansion.

⑬ **DELAY switches**
H; Picture is shifted horizontally, and the horizontal sync is displayed in left approximately one-fourth of screen.
Picture brightness is automatically increased.
V: Picture is shifted vertically, and the vertical sync is displayed near the center of screen. Picture is expanded by approximately 3 times, unless the underscan is activated.
Picture brightness is automatically increased.
- Pulse cross picture can be displayed by activating both the H and V switches.

⑭ **BLUE ONLY switch**
This switch turns off the red and green beams to facilitate VTR calibration.

⑮ **AFC switch**
FAST: AFC operation is performed in the fast mode. In this mode, incoming sync timing errors are largely corrected.
SLOW: AFC operation is performed in the slow mode, and incoming sync timing errors are displayed on the screen.

⑯ **PAL D/S switch**
Selects the D (deluxe) or S (simple) PAL system.

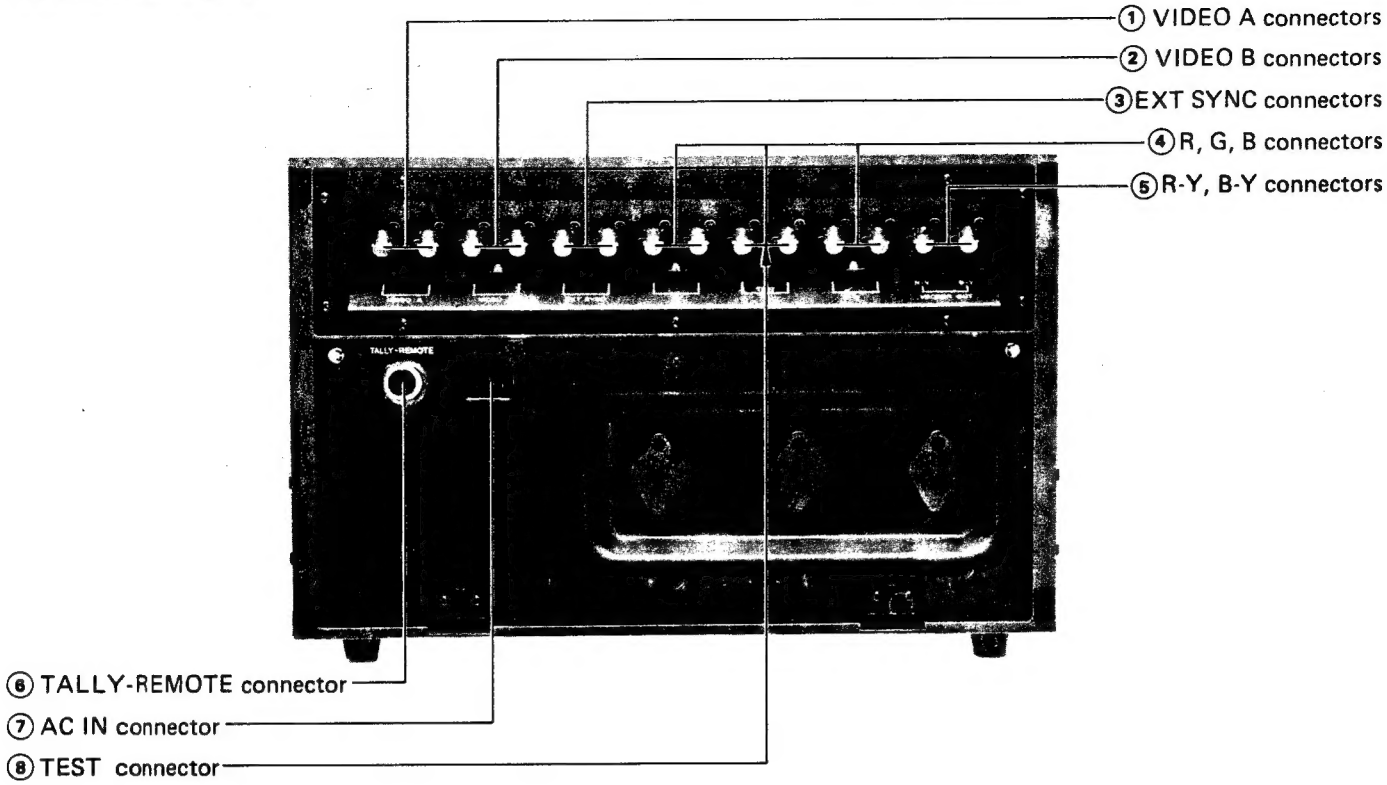
⑰ **Tally lamp**
Desired figure, from 0 to 9, can be displayed by the seven LED segments when the tally manual/remote select switch is set to manual (downward) position.
The tally lamp on or off can be remotely controlled when the same switch is set to remote (upward) position.
In the remote-control mode, the tally lamp lights when the No.7 and 8 pins of the rear TALLY-REMOTE connector are short-circuited.

⑱ **Drawer**

⑲ **Drawer pull**

⑳ **Drawer keyhole**

1-5-2. Connector panel



① **VIDEO A connectors**
② **VIDEO B connectors**
⑧ **TEST connector**
BNC connectors, 0.7 Vp-p non-composite or 1 Vp-p composite video ±6 dB, positive, loop through, high impedance.

③ **EXT SYNC connectors**
BNC connectors, 1 – 8 Vp-p negative, loop through, high impedance.

④ **R, G, B connectors**
BNC connectors, 0.7 Vp-p non-composite or 1 Vp-p composite video ±6 dB, positive, loop through, high impedance.

⑤ **R-Y, B-Y connectors**
BNC connectors, R-Y and B-Y demodulated chroma output. This connectors provides high impedance output from the R-Y and B-Y demodulated circuits for driving the Tektronix 602 Display Unit. This output enables the unit to provide vector displays.

⑥ **TALLY-REMOTE connector**
10P special connector

Pin No.	Remarks
1	REMOTE and VIDEO A
2	EXT SYNC
3	TEST
4	VIDEO B
5	R, G, B
6	REMOTE GND
7	TALLY
8	TALLY
9	————
10	————

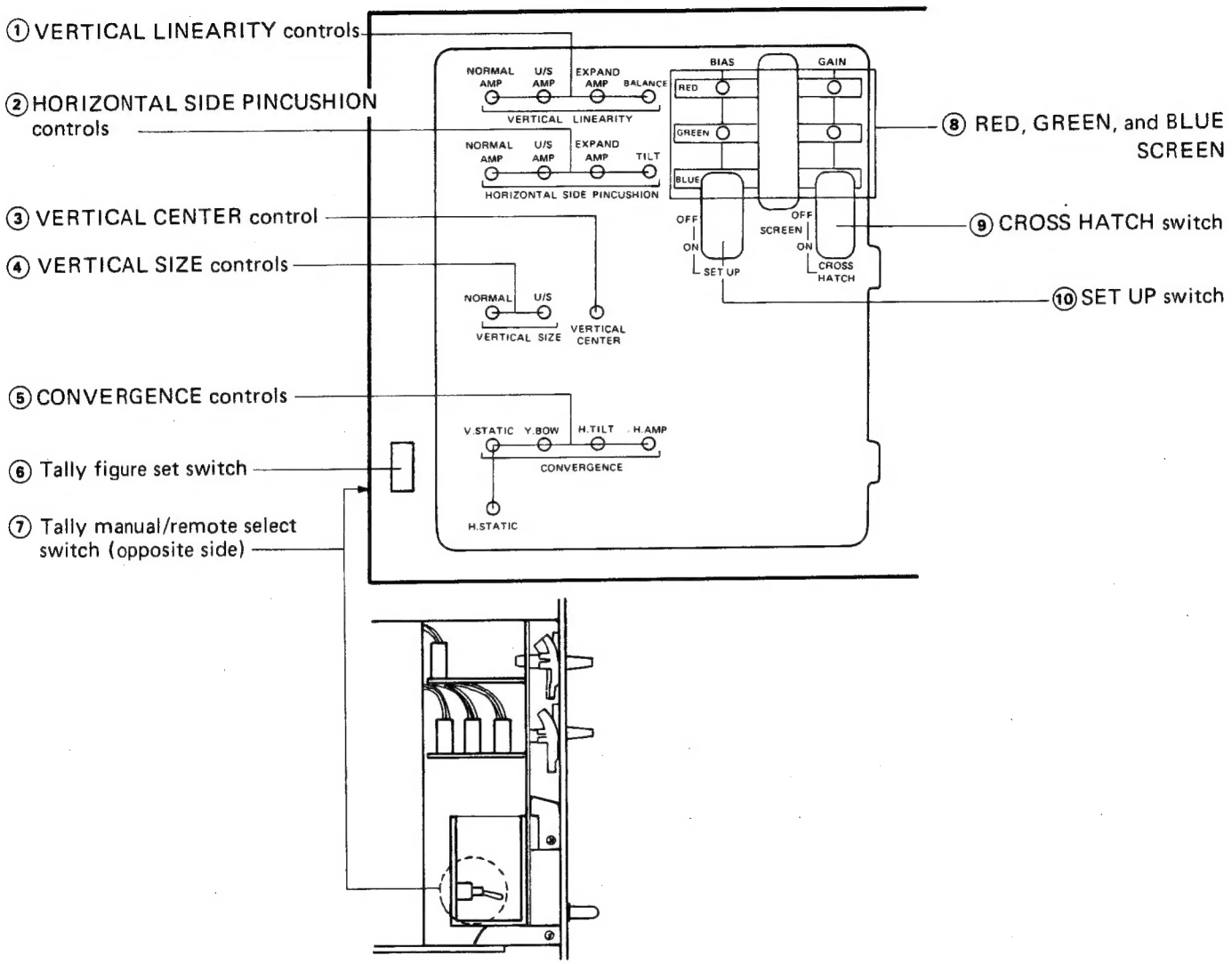
- Relations of operating modes and pin connections with the remote control function are shown on the table below.

	Operating mode	Pin connection
1	VIDEO A with INT SYNC	1 and 6
2	VIDEO B with INT SYNC	1, 4 and 6
3	R, G, B with INT SYNC (Synchronizing signal must be included in the G-channel signal.)	1, 5 and 6
4	VIDEO A with EXT SYNC	1, 2 and 6
5	VIDEO B with EXT SYNC	1, 2, 4 and 6
6	R, G, B with EXT SYNC	1, 2, 5 and 6
7	TEST with INT SYNC	1, 3 and 6
8	TEST with EXT SYNC	1, 2, 3 and 6

- The operating modes with the remote control function have priority to the modes selected with the front panel Operation Controls.

⑦ **AC IN connector**
For an ac power supply.

1-5-3. Sub control panel



- The following controls and switches are located inside the drawer.

① **VERTICAL LINEARITY controls**

NORMAL AMP
U/S AMP
EXPAND AMP : These controls allow the vertical linearity amplifier gains to be adjusted in the normal, underscanned, or expanded picture respectively.

BALANCE: This control allows the vertical linearity balance at the top and bottom of screen to be adjusted.

② **HORIZONTAL SIDE PINCUSHION controls**

NORMAL AMP
U/S AMP
EXPAND AMP : These controls allow the horizontal side pincushion amplifier gains to be adjusted in the normal, underscanned, or expanded picture respectively.

TILT: This control allows the trapezoidal-shaped picture to be corrected.

③ **VERTICAL CENTER control**

This control allows the vertical position of the picture to be adjusted.

④ **VERTICAL SIZE controls**

NORMAL
U/S: These controls allow the picture height gains to be adjusted in the normal or underscanned picture respectively.

⑤ **CONVERGENCE controls**

V. STATIC: This control allows the vertical convergence at the center of screen to be adjusted.

Y. BOW: This control allows the vertical convergence at the top and bottom of screen to be adjusted.

H. TILT: This control allows the horizontal convergence at the left and right sides of screen to be adjusted.

H. AMP: This control allows the horizontal convergence amplifier gains to be adjusted.

H. STATIC: This control allows the horizontal convergence at the center of screen to be adjusted.

⑥ **Tally figure set switch**

When the tally manual/remote select switch is set to manual (downward) position, desired tally figure display, from 0 to 9, can be selected with this switch.

⑦ **Tally manual/remote select switch**

manual (downward) position: Desired tally figure, from 0 to 9, can be displayed.

remote (upward) position: Tally lamp on or off can be remotely controlled.

⑧ **RED, GREEN, and BLUE SCREEN**

Each screen has an ON/OFF switch, BIAS and GAIN controls.

ON/OFF switches: These switches allow the appropriate beam to be turned on or off.

BIAS controls: These controls provide screen adjustment for low light color temperature.

GAIN controls: These controls provide screen adjustment for high light color temperature.

⑨ **CROSS HATCH switch**

When this switch is set to ON, the crosshatch pattern is displayed on the screen, provided that a composite video or composite sync signal is supplied to the VIDEO A (or B), TEST, or EXT SYNC. connectors respectively.

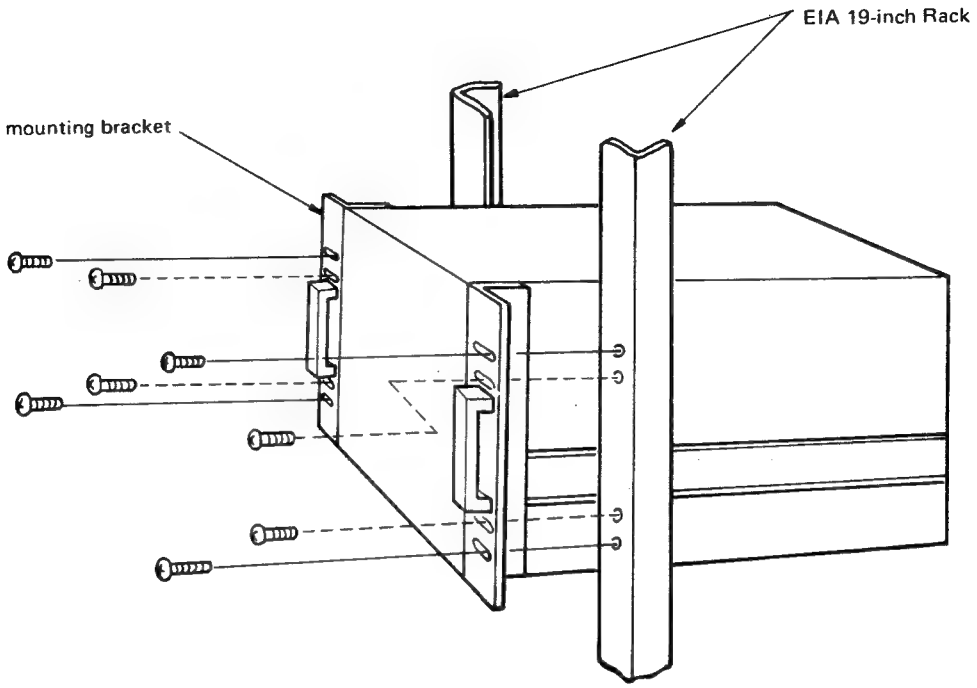
- Make sure that the INPUT select switch is not set to RGB position.

⑩ **SET UP switch**

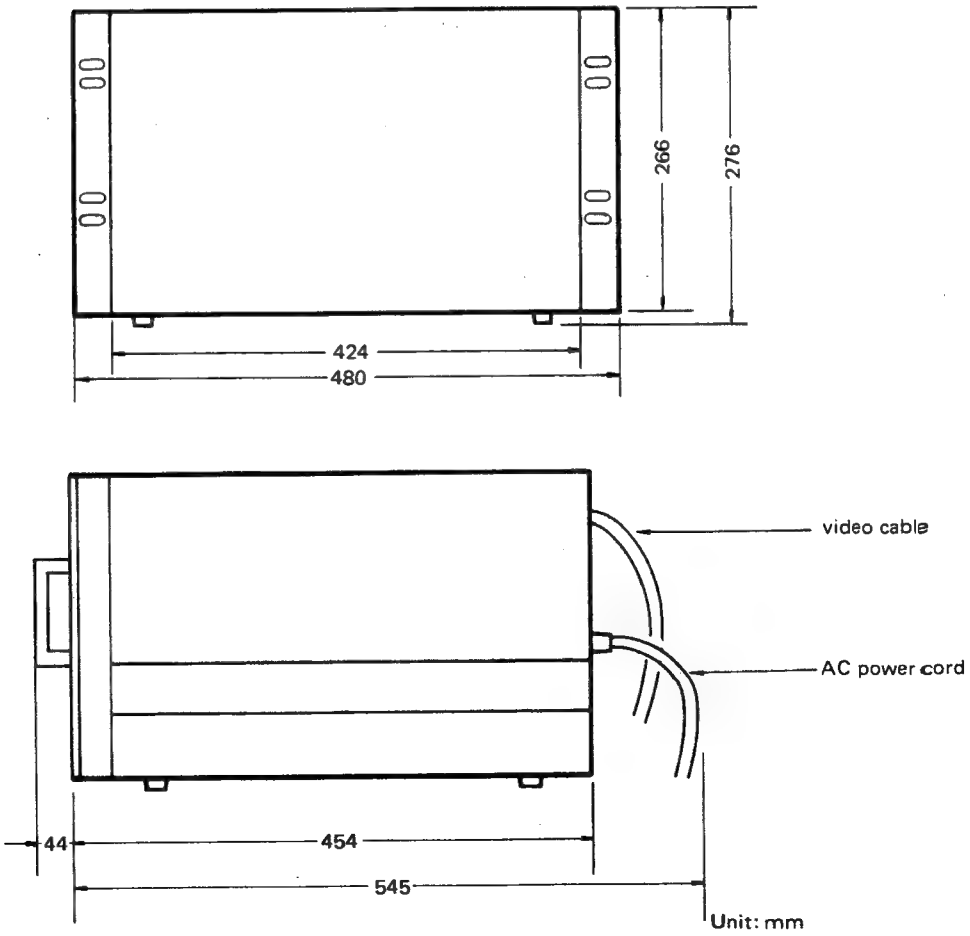
When this switch is set to ON, a horizontal white bar is displayed on the screen for adjusting the low-level white balance.

1-6. RACK MOUNTING

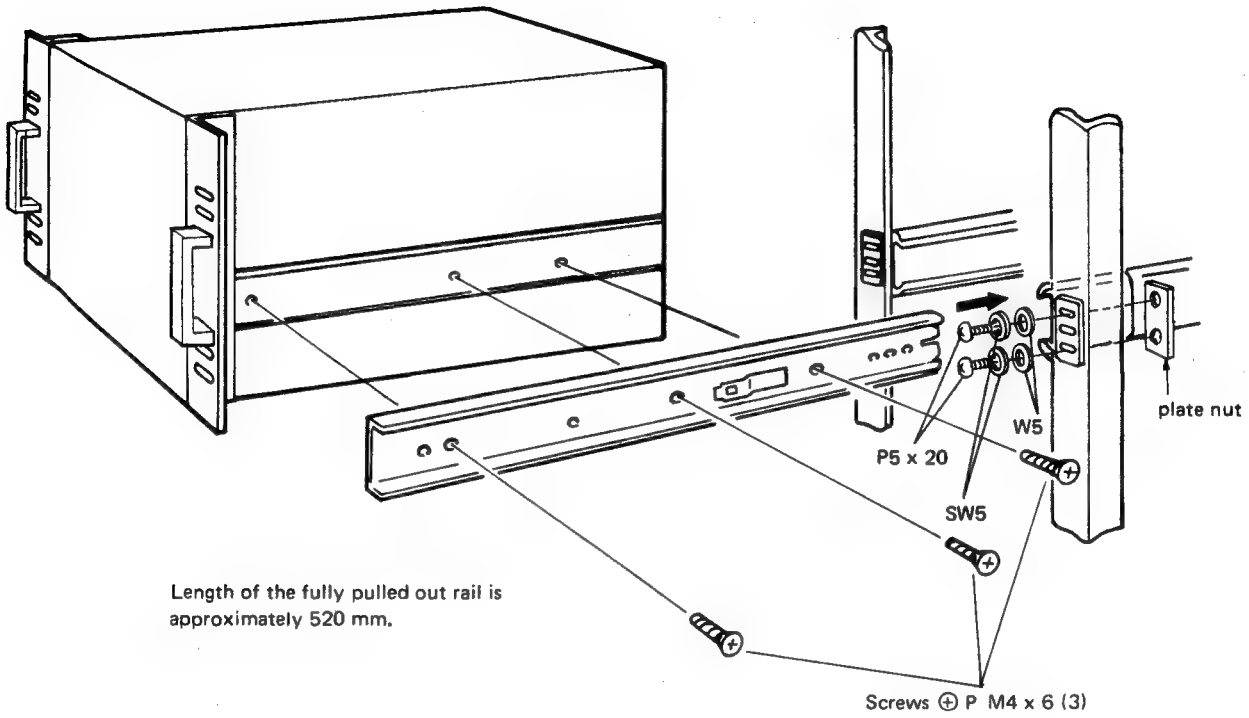
This monitor can be rack mounted in an EIA standard 19-inch rack as shown in the illustration below. Before mounting, remove the bottom feet (total of 4).

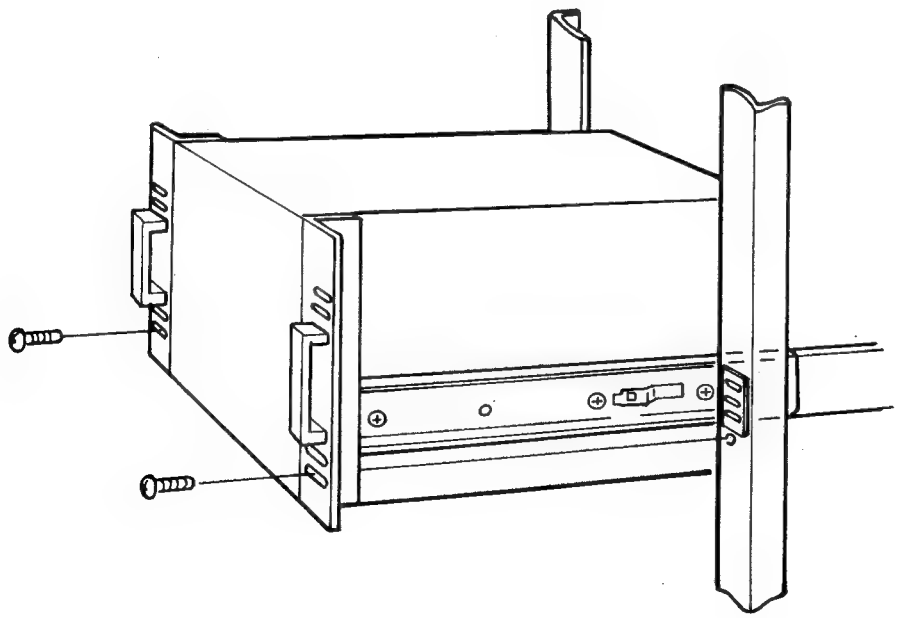


Dimensions

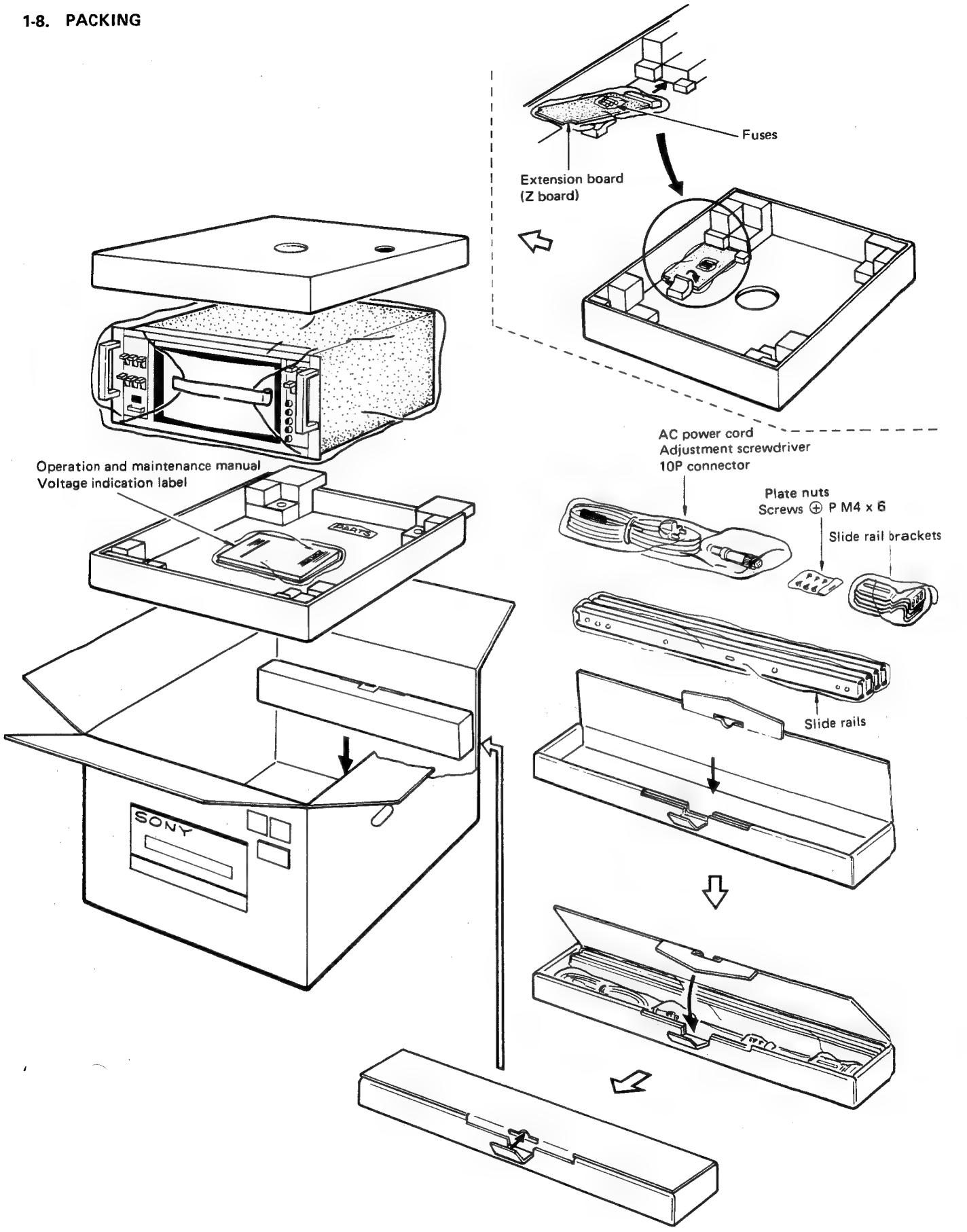


1-7. SLIDE RAIL MOUNTING





1-8. PACKING


Fuses
Extension board
(Z board)
AC power cord
Adjustment screwdriver
10P connector
Plate nuts
Screws ⊕ P M4 x 6
Slide rail brackets
Operation and maintenance manual
Voltage indication label
Slide rails
SONY

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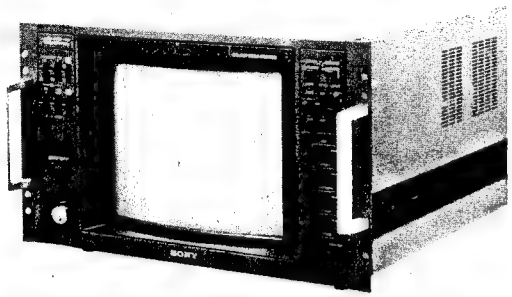
TRINITRON® FARB-VIDEOMONITOR

BVM-1301P/PM



SICHERHEITSHINWEIS FÜR KOMPONENTEN !!

DIE IN DEN SCHALTBILDERN, DEN IN EINZELTEILE AUFGELÖSTEN PERSPEKTIVISCHEN ZEICHNUNGEN UND DEN TEILELISTEN SCHRAFFIERT EINGEZEICHNETE UND DURCH DAS ZEICHEN ⚠ GEKENNZEICHNETE KOMPONENTEN SIND FÜR DIE BETRIEBSSICHERHEIT KRITISCH. DIESE KOMPONENTEN SIND DURCH SOLCHE SONY TEILE ZU ERSETZEN, DEREN TEILENUMMERN IN DIESEM HANDBUCH ODER IN VON SONY HERAUSGEGEBENEN ERGÄNZUNGEN ANGEGEBEN SIND.
AUF FÜR DIE BETRIEBSSICHERHEIT KRITISCHE SCHALTUNGSEINSTELLUNGEN WIRD IN DIESEM HANDBUCH HINGEWIESEN.
BEFOLGEN SIE DIESE ANWEISUNGEN STETS, WENN KRITISCHE KOMPONENTEN AUSGEWECHSELT WERDEN ODER VERDACHT AUF FUNKTIONSSTÖRUNGEN BESTEHT.

ACHTUNG !!

ZUM ENTMAGNETISIEREN DES BILDSCHIRMS DEN EXTERNEN ENTMAGNETISIERER NIE VERWENDEN. NUR DEN DEGAUSS-SCHALTER AUF DER FRONTPLATTE VERWENDEN.

BEDIENUNGSVORGÄNGE DES BVM-1301P UND BVM-1301PM SIND IDENTISCH. EIGENSCHAFTEN, JUSTIERUNG, USW. KÖNNEN JEDOCH UNTERSCHIEDLICH SEIN.

BEDIENUNGS- UND WARTUNGSANLEITUNG

TEIL 1
BEDIENUNG

1-1. BESONDERE MERKMALE

- Dieser Monitor arbeitet mit einer verbesserten Bildröhre, deren Auflösung ca. 2,4 mal so hoch ist wie die einer konventionellen Bildröhre.
- Dieser Monitor ist mit Eingängen für Videosignalgemisch A, B, R.G.B. und TEST ausgerüstet, die mit dem INPUT-Wahlschalter wählbar sind.
- Der SYNC-Wahlschalter erlaubt Umschalten zwischen interner und externer Synchronisierung.
  Wenn weiterhin das Eingangssignal des G-Kanals ein vollständiges Synchronsignal enthält, kann dieser Monitor mit interner Synchronisierung betrieben werden.
- Dieser Monitor bietet zwei Arten der Farbwiedergabe, AUTO und B/W. Bei Betriebsart AUTO wird je nach Vorhandensein des Farb-Burstsignals automatisch auf Farbe bzw. Schwarzweiß geschaltet.
  Bei Betriebsart B/W wird der Farbkanal abgeschaltet und das Bild stets in Schwarzweiß wiedergegeben.
- Das Synchronsignal kann auf dem Bildschirm wiedergegeben werden. Bei eingeschaltetem H DELAY-Schalter wird das Horizontal-Synchronsignal auf dem linken Viertel des Bildschirms angezeigt. Bei eingeschaltetem V DELAY-Schalter erscheint das Vertikal-Synchronsignal in Nähe der Bildschirmmitte, um ca. das Dreifache gespreizt.
  Wenn sowohl der H- als auch der V DELAY-Schalter aktiviert sind, erscheint auf dem Bildschirm die Kreuzimpulsanzeige. Dabei wird durch Einschalten des UNDERSCAN-Schalters die Spreizung des Vertikal-Synchronsignals abgeschaltet.
- Zur Wahl der horizontalen AFC-Zeitkonstanten, FAST oder SLOW, ist ein AFC-Schalter vorhanden. Stellung SLOW dient zur Beobachtung des Jitter vom Videorecorder.
- Die aus sieben LED-Segmenten bestehende Signallampe zeigt Ziffern von 0 bis 9 an.
  Bei kurzgeschlossenem TALLY-REMOTE-Anschluß auf der Geräterückseite kann die Signallampe ferngesteuert eingeschaltet werden.
- Die linke Seite der Frontplatte ist ausziehbar. Auf dieser Platte sind zur leichten Einstellung die Regler für Linearität, Konvergenz usw. angeordnet.
- Das Gerät ist mit einem Übersteuerungsschutzschaltkreis ausgerüstet, um die Bildröhre vor durch Störungen z. B. des Ablenkungssystems hervorgerufener Beschädigung zu schützen.
- Wenn das Videosignalgemisch oder das Synchronsignalgemisch über die Anschlüsse VIDEO A (oder B) bzw. EXT SYNC eingespeist wird, kann durch Einschalten des CROSS HATCH-Schalters ein mit dem Signal synchronisiertes Schachbrettmuster auf dem Bildschirm wiedergegeben werden.
- An der rechten und linken Seite dieses Monitors können Arme und Gleitschienen angebracht werden. Diese Zusatzelemente erlauben den Einbau dieses Monitors in ein 19 Zoll EIA-Normgestell.
- Dank des demodulierten R-Y und B-Y Chrominanzausgangs kann das Gerät zur Vektoranzeige benutzt werden.
- Die 1H-Verzögerungsleitung arbeitet mit einem CCD (Charge-Coupled Device), wodurch geringere Verzerrung im Vergleich zu einer konventionellen Verzögerungsleitung aus Glas gewährleistet ist.

1-2. TECHNISCHE DATEN

SYSTEM	BVM-1301P: 625 Zeilen pro Bild, 50 Halbbilder pro Sekunde, Zeilensprungverfahren, PAL BVM-1301PM: 525 Zeilen pro Bild, 60 Halbbilder pro Sekunde, Zeilensprungverfahren, PAL-M
LEISTUNGSAUFNAHME	Typisch: 136 Watt Maximal: 160 Watt
NETZSPANNUNG	Netzspannung umschaltbar zwischen 100, 120, 220, 240 Volt Jede Netzspannung innerhalb ± 10%
EINGANGS-ANSCHLÜSSE	BNC
R.G.B., VIDEO, TEST EINGÄNGE	0,7 Vs-s unvollständiges oder 1 Vs-s vollständiges Videosignalgemisch ±6 dB positiv, durchgeschleift, hochohmig
EXT SYNC EINGÄNGE	1–8 Vs-s negativ, durchgeschleift, hochohmig
FEHLERDÄMPFUNG	Mindestens 46 dB bis 5 MHz mit 75-Ohm-Abschluß (nicht intern abgeschlossen)
MAXIMALER ZUL. GLEICHSPANNUNGSEINGANG	±5 Volt
BRUMMDÄMPFUNG	Brumm wird um mindestens 50 dB gedämpft, und maximaler Brumm ist weniger als 4 Vrms, wenn dem Monitor in ungeerdetem Zustand Brumm zugeleitet wird
RGB-LEISTUNG	
DIFFERENTIAL-GEWINN	Innerhalb 2% bei einer Luminanz von Null bis 20 FL
DIFFERENTIALPHASE	Innerhalb 2 Grad bei einer Luminanz von Null bis 20 FL
FREQUENZGANG	100 Hz bis 8 MHz ±1 dB
GLEICHSTROM-RÜCKSTELLUNG	Hintere Schwarzschulter Hinterer Schwarzschulterpegel innerhalb 1% der Spitzenluminanz von 10% bis 90% APL
SYNCHRONISIERUNG	
AFC SLOW	Bewertungsfaktor ist mehr als 5 von 2 Hz bis 100 Hz
FAST	Bewertungsfaktor ist weniger als 1 bis 2 Hz 2 bis 10 Hz 3 bis 500 Hz 4 bis 10 kHz
LINE PULL RANGE/ LINE HOLD RANGE	Mehr als ±500 Hz bei schneller Zeitkonstante
VERTIKABLE AUSTASTPERIODE	
NORMAL	Innerhalb 1,3 msek. (PAL) Innerhalb 1,0 msek. (PAL-M)
UNDERSCAN	Innerhalb 0,8 msek.
HORIZONTALE RÜCKLAUFZEIT	Innerhalb 10 Mikrosek.

BILDDATEN

HÖHE	182 mm
BREITE	239 mm
UNDERSCAN	ca. 10% Verkleinerung
LINEARITÄT	Innerhalb des Zentrumsbereiches, der durch einen Kreis begrenzt wird, dessen Durchmesser gleich der Bildhöhe ist, innerhalb 1% der Bildhöhe.
FARBTEMPERATUR	6 500 Grad K, einstellbar für andere Normen
FARBTON-NENNKOORDINATEN	Werte entsprechen den EBU-Vorschriften.
KONVERGENZFEHLER	Weniger als ±1 mm innerhalb des Zentrumsbereiches Außerhalb des Zentrumsbereiches weniger als ±2 mm
KALIBRIERTER KONTRAST	20 FL bei der Weißspitze eines Standard 1 Vs-s Signals
RASTERGRÖSSEN-STABILITÄT	Weniger als 1% Bildhöhe, Null bis 100 APL (durchschnittlicher Bildpegel) bei 20 FL Spitzenluminanz

ABTASTVERZÖGERUNG

HORIZONTAL-VERZÖGERUNG	ca. 1/4 Zeile
VERTIKAL-VERZÖGERUNG	ca. ein halbes Halbbild, die Vertikalabtastung ist gespreizt, außer die Underscan-Funktion ist aktiviert.
AUFLÖSUNG	Minimal 600 Zeilen im Bildzentrum bei 20 FL Luminanz

UMGEBUNG

ZUL. BETRIEBS-TEMPERATUR	Null bis +40 Grad C
NENNLEISTUNG-BETRIEBSTEMPERATUR	20 bis 30 Grad C
LUFTFEUCHTIGKEIT	Null bis 90% nicht kondensierend
HÖHE ü.d.M.	3 300 m

ALLGEMEINES

BILDRÖHRENSCHUTZ	EHT (Extremely High Tension) ist im Fall eines Abtastversagens geschützt.
AUFWÄRMZEIT	30 Minuten bis zur Erreichung der Nennleistung
HEIZSPANNUNG	Geregelte Gleichspannung
ANODENSPANNUNG	Genau eingestellt HV 20 kV bei Nullstrahlstrom

PHYSIKALISCHE EIGENSCHAFTEN

ABMESSUNGEN

	Gehäuse	Gestelleinschub
Höhe	276 mm	266 mm
Breite	424 mm	480 mm
Tiefe (ohne Arme)	454 mm	454 mm

GEWICHT Nettogewicht 26 kg 27,5 kg

HINWEISE:

- Wenn das Netzkabel und der Fernbedienungsanschluß benutzt werden, beträgt die Tiefenabmessung 545 mm.
- Dieser Monitor hat Arme zum Gestelleinbau.
- Zum Gestelleinbau können die Füße vom Gehäuse abgenommen werden.
- Für Einzelheiten bezüglich der Abmessungen siehe „1-6. GESTELLEINBAU".

PAL-DATEN

LUMINANZKANAL

DIFFERENTIAL-GEWINN	Innerhalb 2% bei einer Luminanz von Null bis 20 FL
DIFFERENTIAL-PHASE	Innerhalb 2 Grad bei einer Luminanz von Null bis 20 FL
FREQUENZGANG	Monochrom 100 Hz bis 6,5 MHz ±1 dB (Klarzeichner auf Null) Farbe Kerbfilter filtert die Frequenz im 4,43-MHz-Bereich aus.

CHROMINANZKANAL

DEMODULATIONS-ACHSE	R–Y, B–Y
BANDPASS	1,3 MHz Äquiband
HILFSTRÄGER-RÜCKGEWINNUNG	±1 Grad (Standard-Eingangssignal)
FARBWERTBEREICH	Mehr als ±10 Grad (Standard-Eingangssignal)
FARBSÄTTIGUNGS-BEREICH	Voreingestellt auf Null dB Mehr als ±6 dB

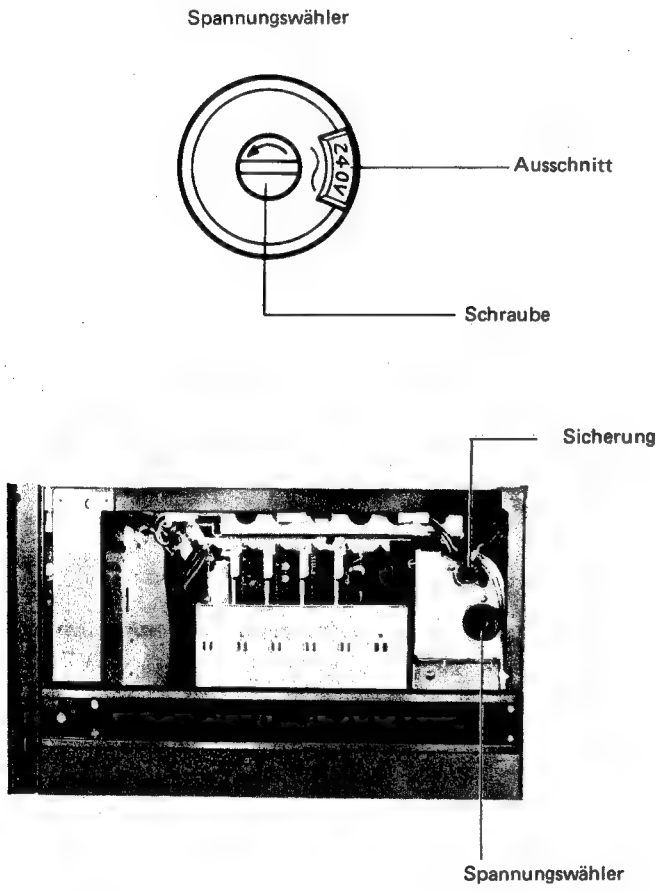
CHROMINANZ/LUMINANZ

ZEITFEHLER	Weniger als 40 nsek.
VERSTÄRKUNGS-FEHLER	Weniger als 5%
KLARZEICHNER	Ein stufenlos einstellbarer Regler auf der Frontplatte ermöglicht eine Verstärkung von bis zu 8 dB bei 4,5 MHz.
GLEICHSTROM-RÜCKSTELLUNG	Hintere Schwarzschulter Hinterer Schwarzschulterpegel innerhalb 1% der Spitzenluminanz von 10% bis 90% APL

1-3. SPANNUNGSEINSTELLUNG

Die Betriebsspannung des BVM-1301P ist auf 240 V Wechselspannung und die des BVM-1301PM auf 220 V Wechselspannung werkseitig eingestellt. Die Spannung ist einstellbar auf 100 V, 120 V, 220 V oder 240 V Wechselspannung.
Der Spannungswähler, der sich auf der rechten Seite im Gehäuseinneren befindet, wird wie folgt umgestellt.
Vergewissern Sie sich, bevor Sie den Wähler umstellen, daß das Netzkabel von der Steckdose abgezogen ist.
Lösen Sie die Schraube in der Mitte, indem Sie sie mit einem Schraubenzieher nach links drehen. Ziehen Sie dann den Spannungswähler heraus, und setzen Sie ihn wieder so ein, daß die richtige Voltzahl in dem Ausschnitt erscheint. Ziehen Sie zum Schluß die Schraube wieder an.

- Verwenden Sie bei einer Einstellung auf 100 V oder 120 V die 3,15-A-Sicherung und bei einer Einstellung auf 220 V oder 240 V die 1,6-A-Sicherung.

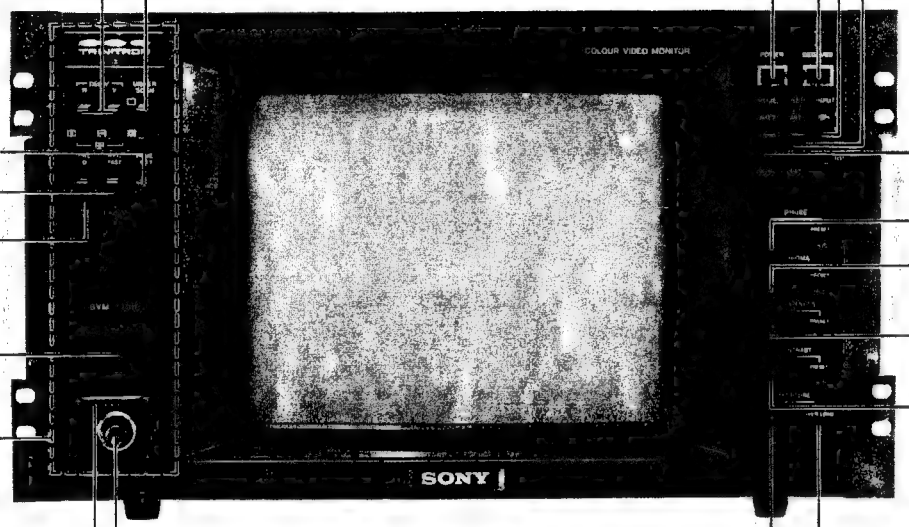


1-4. EINBAUHINWEISE

- Stellen Sie den Monitor an einem Ort auf, der trocken und gut belüftet ist.
- Vermeiden Sie die Aufstellung in einem Raum mit hoher Temperatur oder in der Nähe einer Wärmequelle.
- Vermeiden Sie die Aufstellung an staubigen Orten und Orten, die Vibrationen ausgesetzt sind.
- Halten Sie das Gerät fern von Orten, wo starke elektrische oder magnetische Felder vorhanden sind.
- Halten Sie den Monitor fern von Orten, die direkter Sonneneinstrahlung, starken Lichtquellen oder Lichtblitzen ausgesetzt sind.

1-5. BEDIENUNGSELEMENTE

1-5-1. Frontplatte



① Netzschalter [POWER] und Kontrollampe
② Entmagnetisierungstaste [DEGAUSS]
③ Eingangswahlschalter [INPUT]
④ Synchronisierungswahlschalter [SYNC]
⑤ Betriebsartenwahlschalter [MODE]
⑥ Farbwertregler [PHASE]
⑦ Farbsättigungsregler [CHROMA]
⑧ Helligkeitsregler [BRIGHTNESS]
⑨ Kontrastregler [CONTRAST]
⑩ Übersteuerungskontrollampe [OVER LOAD]
⑪ Klarzeichner-Regler [APERTURE]
⑫ Bildverkleinerungsschalter [UNDERSCAN]
⑬ Verzögerungsschalter [DELAY]
⑭ Blauschalter [BLUE ONLY]
⑮ AFC-Schalter
⑯ PAL D/S Schalter
⑰ Signallampe
⑱ Schubfach
⑲ Ausziehgriff
⑳ Schubfach-Schlüsselloch

① **Netzschalter [POWER] und Kontrollampe**

② **Entmagnetisierungstaste [DEGAUSS]**
Diese Taste dient zur Entmagnetisierung des Bildschirms. Drücken Sie die Taste hierzu etwa 10 Sekunden lang, nachdem der Strom eingeschaltet worden ist.

③ **Eingangswahlschalter [INPUT]**
A: Für über den Anschluß VIDEO A zugeleitete Signale.
B: Für über den Anschluß VIDEO B zugeleitete Signale.
RGB: Für über die Anschlüsse R, G und B zugeleitete Signale.
TEST: Für über den TEST-Anschluß zugeleitete Signale.

④ **Synchronisierungswahlschalter [SYNC]**
INT: Wenn ein Videosignalgemisch ohne externe Synchronisierung zugeleitet wird.
EXT: Wenn ein externes Synchronsignalgemisch von einem externen Synchrongenerator zugeleitet wird.

⑤ **Betriebsartenwahlschalter [MODE]**
AUTO: Je nachdem ob der Farbburst vorhanden ist oder nicht, wird automatisch auf Farb- bzw. Schwarzweißbetrieb geschaltet.
B/W: Der Farbkanal ist abgeschaltet, und das Bild wird in Schwarzweiß wiedergegeben.

⑥ **Farbwertregler [PHASE] (nur für das PAL-S System)**
Der linke PHASE-Regler dient zur Einstellung des Farbwertwinkels. Die Einraststellung ganz links ergibt den werkseitig voreingestellten Wert. Zur Feineinstellung des voreingestellten Pegels wird der rechte PRESET-Regler benutzt. Zur weiteren Pegelverstellung kann der linke Regler nach rechts gedreht werden.

⑦ **Farbsättigungsregler [CHROMA]**
Der linke CHROMA-Regler dient zur Einstellung der Farbsättigung. Der Gebrauch des linken Reglers und des rechten PRESET-Reglers ist gleich dem der PHASE-Regler ⑥.

⑧ **Helligkeitsregler [BRIGHTNESS]**
Der linke BRIGHTNESS-Regler dient zur Einstellung der Bildhelligkeit (Gleichspannungspegel).
Der Gebrauch des linken Reglers und des rechten PRESET-Reglers ist gleich dem der PHASE-Regler ⑥.

⑨ **Kontrastregler [CONTRAST]**
Der linke CONTRAST-Regler dient zur Einstellung des Bildkontrastes. Der Gebrauch des linken Reglers und des rechten PRESET-Reglers ist gleich dem der PHASE-Regler ⑥.

⑩ **Übersteuerungskontrollampe [OVER LOAD]**
Diese Lampe leuchtet zur Warnung vor Übersteuerung auf, wenn der Übersteuerungsschutzschaltkreis aktiviert worden ist.

⑪ **Klarzeichner-Regler [APERTURE]**
Hiermit ist der Frequenzgang regelbar. Die Einraststellung ganz links ergibt den werkseitig voreingestellten Pegel.

⑫ **Bildverkleinerungsschalter [UNDERSCAN]**
Mit diesem Schalter kann zwischen normalem und verkleinertem Bildformat gewählt werden.
Die Underscan-Funktion verringert die Bildgröße um etwa 10%. Wenn der V DELAY-Schalter eingeschaltet ist, wird bei Betätigung dieses Schalters die Spreizung des Vertikal-Synchronsignals aufgehoben.

⑬ **Verzögerungsschalter [DELAY]**
H: Das Bild wird horizontal verschoben, und das Horizontal-Synchronsignal wird auf dem linken Bildschirmviertel angezeigt. Die Bildhelligkeit wird automatisch erhöht.
V: Das Bild wird vertikal verschoben, und das Vertikal-Synchronsignal wird nahe der Bildschirmmitte angezeigt. Das Bild wird um ca. das Dreifache gespreizt, außer die Underscan-Funktion wird aktiviert.
Die Bildhelligkeit wird automatisch erhöht.
- Durch Einschalten sowohl des H- als auch des V-Schalters kann ein Kreuzimpulsbild wiedergegeben werden.

⑭ **Blauschalter [BLUE ONLY]**
Mit diesem Schalter können der Rot- und der Grünstrahl zur Erleichterung der Kalibrierung des Videorecorders abgeschaltet werden.

⑮ **AFC-Schalter**
FAST: AFC-Betrieb erfolgt schnell. Synchronisierungsfehler werden weitgehend korrigiert.
SLOW: AFC-Betrieb erfolgt verlangsamt. Synchronisierungsfehler sind auf dem Bildschirm sichtbar.

⑯ **PAL D/S Schalter**
Zur Wahl zwischen dem D (deluxe) und S (simple) PAL-System.

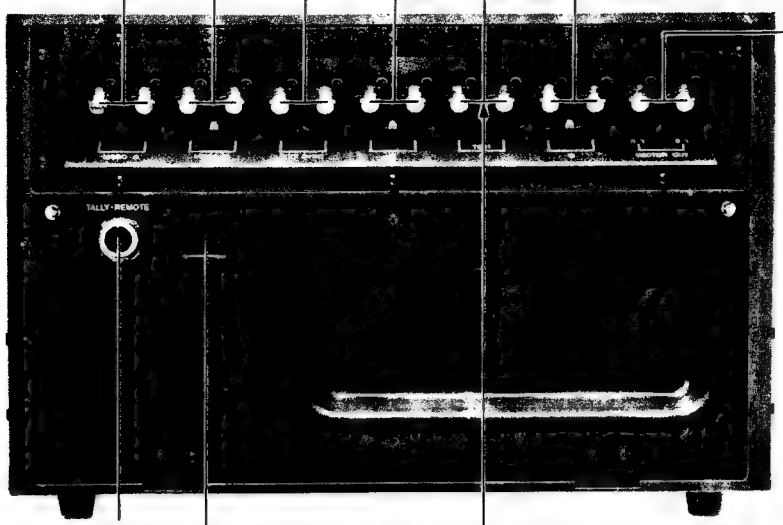
⑰ **Signallampe**
Anzeige der gewünschten Ziffer, von 0 bis 9, durch die sieben LED-Segmente ist möglich, wenn der Signallampe-Manual/Fernbedienungswahlschalter auf Manualposition (unten) steht. Die Signallampe kann über Fernbedienung ein- und ausgeschaltet werden, wenn dieser Schalter auf Fernbedienungsposition (oben) steht.
Bei Fernbedienung leuchtet die Signallampe auf, wenn die Stifte Nr. 7 und 8 des TALLY-REMOTE-Anschlusses auf der Geräterückseite kurzgeschlossen werden.

⑱ **Schubfach**

⑲ **Ausziehgriff**

⑳ **Schubfach-Schlüsselloch**

1-5-2. Anschlußfeld



① VIDEO A-Anschluß

② VIDEO B-Anschluß

⑧ TEST-Anschluß
BNC-Buchsen, 0,7 Vs-s unvollständiges oder 1 Vs-s vollständiges Videosignalgemisch ±6 dB, positiv, durchgeschleift, hochohmig.

③ Anschluß für externe Synchronisierung [EXT SYNC]
BNC-Buchsen, 1–8 Vs-s, negativ, durchgeschleift, hochohmig.

④ R, G, B Anschlüsse
BNC-Buchsen, 0,7 Vs-s unvollständiges oder 1 Vs-s vollständiges Videosignalgemisch ±6 dB, positiv, durchgeschleift, hochohmig.

⑤ R-Y, B-Y Anschlüsse
BNC-Buchsen, R-Y und B-Y demodulierter Chrominanzausgang. Diese Anschlüsse liefern einen hochohmigen Ausgang von den R-Y- und B-Y-Demodulationsschaltkreisen zum Antrieb der Anzeigeeinheit Tektronix 602. Dieser Ausgang ermöglicht Vektoranzeige mit Hilfe dieser Einheit.

⑥ Signallampenfernbedienungsanschluß [TALLY-REMOTE]
10poliger Spezialanschluß

Stift-Nr.	Bemerkungen
1	REMOTE und VIDEO A
2	EXT SYNC
3	TEST
4	VIDEO B
5	R, G, B
6	REMOTE GND (Erde)
7	TALLY
8	TALLY
9	———
10	———

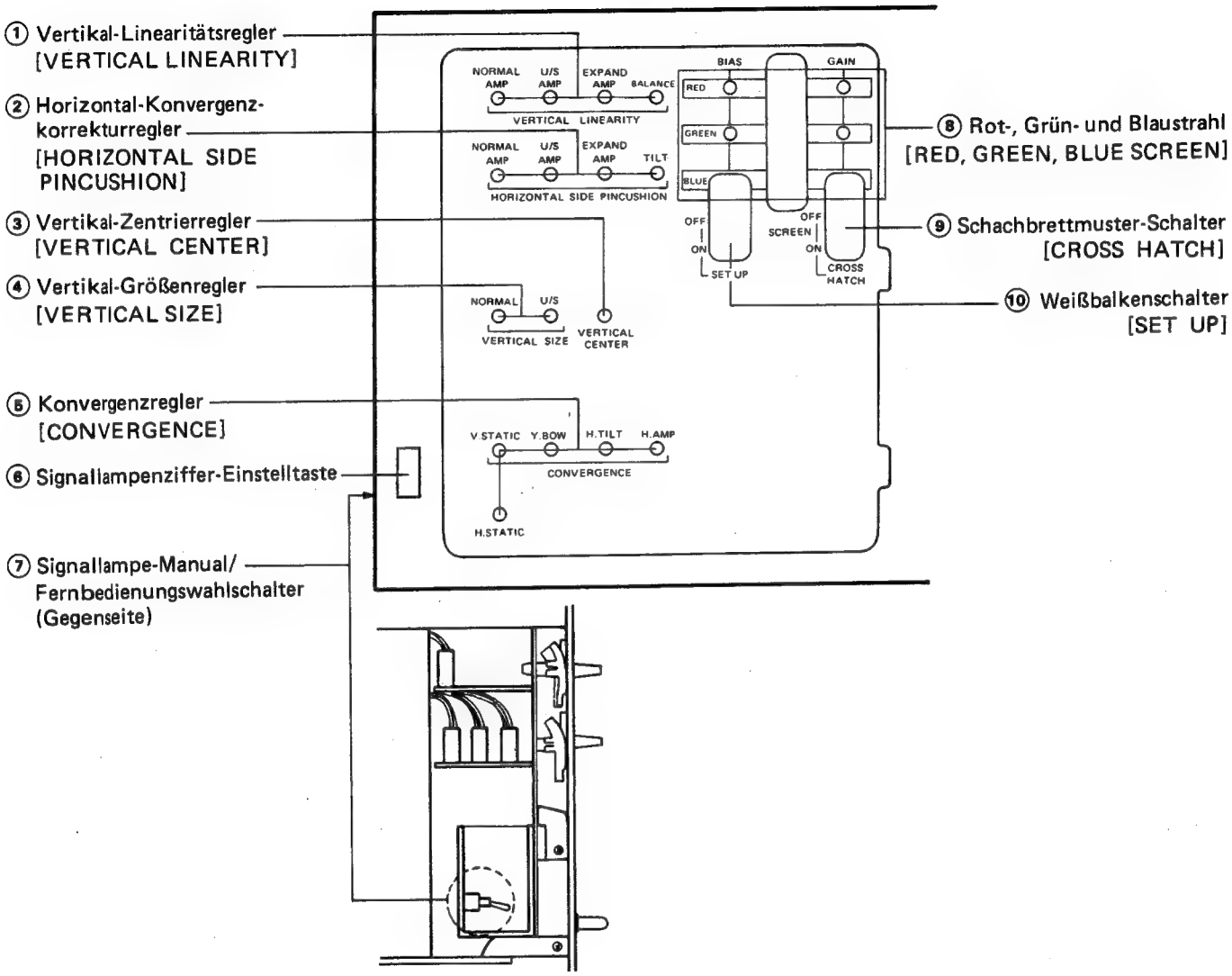
- Aus der folgenden Tabelle ist die Beziehung zwischen Betriebsart und Anschlußstiften bei Fernbedienungsbetrieb ersichtlich.

	Betriebsart	Anschlußstifte
1	VIDEO A mit INT SYNC	1 und 6
2	VIDEO B mit INT SYNC	1, 4 und 6
3	R, G, B mit INT SYNC (Das Synchronsignal muß im Signal des G-Kanals enthalten sein.)	1, 5 und 6
4	VIDEO A mit EXT SYNC	1, 2 und 6
5	VIDEO B mit EXT SYNC	1, 2, 4 und 6
6	R, G, B mit EXT SYNC	1, 2, 5 und 6
7	TEST mit INT SYNC	1, 3 und 6
8	TEST mit EXT SYNC	1, 2, 3 und 6

- Eine per Fernbedienung eingeschaltete Betriebsart hat Vorrang über die mit Hilfe der Bedienungselemente auf der Frontplatte gewählte Betriebsart.

⑦ Netzstromeingang [AC IN]
Zur Netzstromversorgung.

1-5-3. Hilfsreglerfeld



- Die folgenden Regler und Schalter befinden sich im Inneren des Schubfaches.

① **Vertikal-Linearitätsregler [VERTICAL LINEARITY]**

NORMAL AMP
U/S AMP
EXPAND AMP
: Mit diesen Reglern kann bei normalem, verkleinertem und gespreiztem Bild der Verstärkungsgrad des Vertikal-Linearitätsverstärkers eingestellt werden.

BALANCE: Mit diesem Regler kann die vertikale Linearitätsbalance am oberen und unteren Bildschirmende eingestellt werden.

② **Horizontal-Konvergenzkorrekturregler [HORIZONTAL SIDE PINCUSHION]**

NORMAL AMP
U/S AMP
EXPAND AMP
: Mit diesen Reglern kann bei normalem, verkleinertem und gespreiztem Bild die Konvergenzstromverstärkung der Horizontalseite eingestellt werden.

TILT: Dieser Regler dient zur Korrektur von Trapez-Verzeichnungen.

③ **Vertikal-Zentrierregler [VERTICAL CENTER]**

Dieser Regler dient zur Einstellung der Vertikalposition des Bildes.

④ **Vertikal-Größenregler [VERTICAL SIZE]**

NORMAL
U/S: Diese Regler dienen zur Einstellung der Bildhöhe bei normalem und verkleinertem Bild.

⑤ **Konvergenzregler [CONVERGENCE]**

V.STATIC: Mit diesem Regler kann die Vertikalkonvergenz im Bildschirmzentrum eingestellt werden.

Y.BOW: Mit diesem Regler kann die Vertikalkonvergenz am oberen und unteren Bildschirmende eingestellt werden.

H.TILT: Mit diesem Regler kann die Horizontalkonvergenz der linken und rechten Bildschirmseite eingestellt werden.

H.AMP: Mit diesem Regler kann der Verstärkungsgrad des Horizontal-Konvergenzverstärkers eingestellt werden.

H.STATIC: Mit diesem Regler kann die Horizontalkonvergenz im Bildschirmzentrum eingestellt werden.

⑥ **Signallampenziffer-Einstelltaste**

Wenn der Signallampe-Manual/Fernbedienungswahlschalter auf Manualposition (unten) steht, kann mit Hilfe dieser Taste die gewünschte Anzeigeziffer, von 0 bis 9, gewählt werden.

⑦ **Signallampe-Manual/Fernbedienungswahlschalter**

Manualposition (unten): Die gewünschte Anzeigeziffer kann von 0 bis 9 gewählt werden.

Fernbedienungsposition (oben): Die Signallampe kann per Fernbedienung ein- und ausgeschaltet werden.

⑧ **Rot-, Grün- und Blaustrahl [RED, GREEN, BLUE SCREEN]**

Für jeden Elektronenstrahl ist ein ON/OFF-Schalter und ein Vorspannungs- [BIAS] und ein Verstärkungsregler [GAIN] vorhanden.

ON/OFF-Schalter: Mit diesen Schaltern wird der jeweilige Elektronenstrahl ein- bzw. abgeschaltet.

BIAS-Regler: Diese Regler dienen zur Bildschirmeinstellung für Farbtemperaturen bei schwachem Licht.

GAIN-Regler: Diese Regler dienen zur Bildschirmeinstellung für Farbtemperaturen bei starkem Licht.

⑨ **Schachbrettmuster-Schalter [CROSS HATCH]**

Bei auf ON stehendem Schalter erscheint auf dem Bildschirm das Schachbrettmuster, vorausgesetzt, ein vollständiges Videosignal oder Synchronsignalgemisch wird über den Anschluß VIDEO A (oder B), TEST bzw. EXT SYNC zugeleitet.

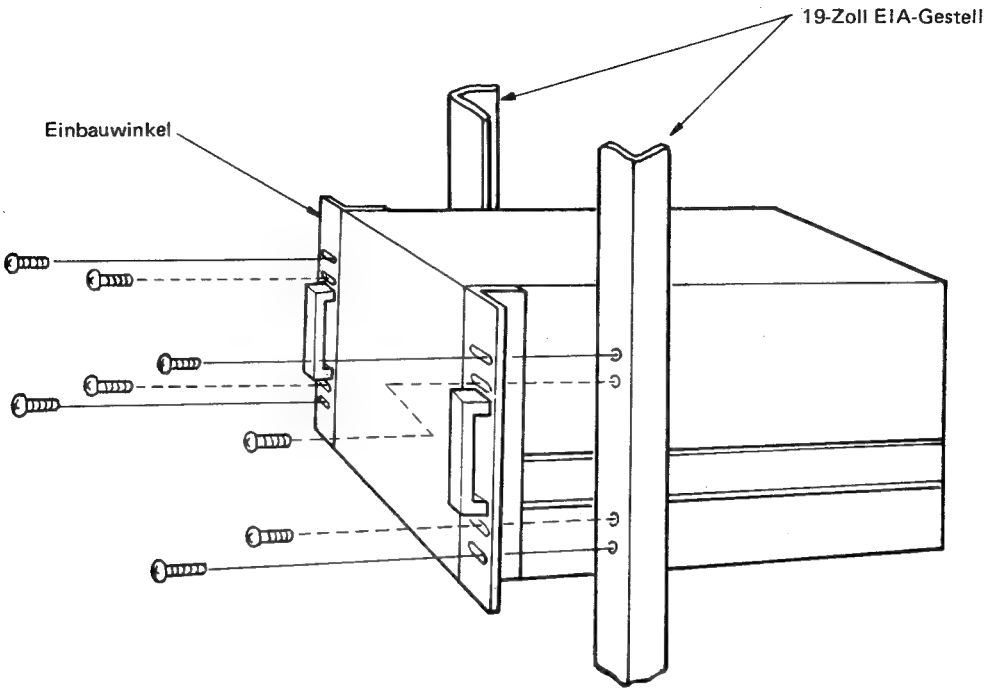
- Achten Sie darauf, daß der INPUT-Wahlschalter nicht auf RGB steht.

⑩ **Weißbalkenschalter [SET UP]**

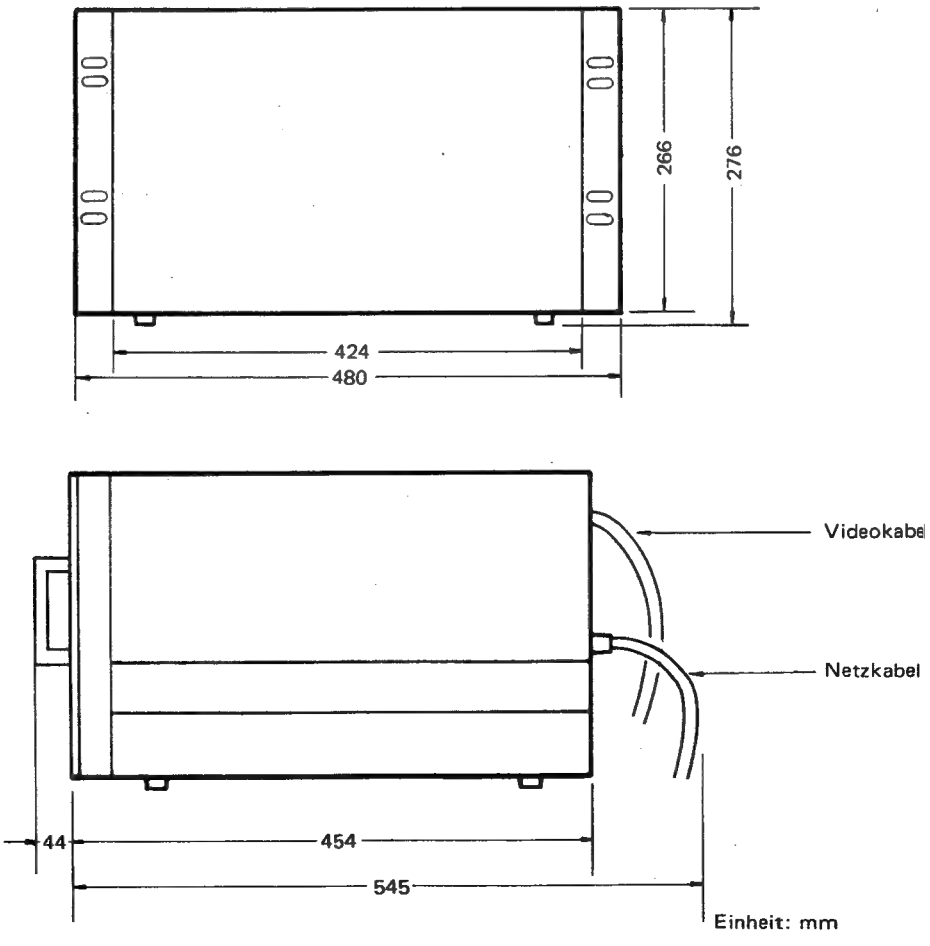
Wenn dieser Schalter auf ON steht, erscheint auf dem Bildschirm ein horizontaler Weißbalken zur Einstellung des niederpegeligen Weißabgleichs.

1-6. GESTELLEINBAU

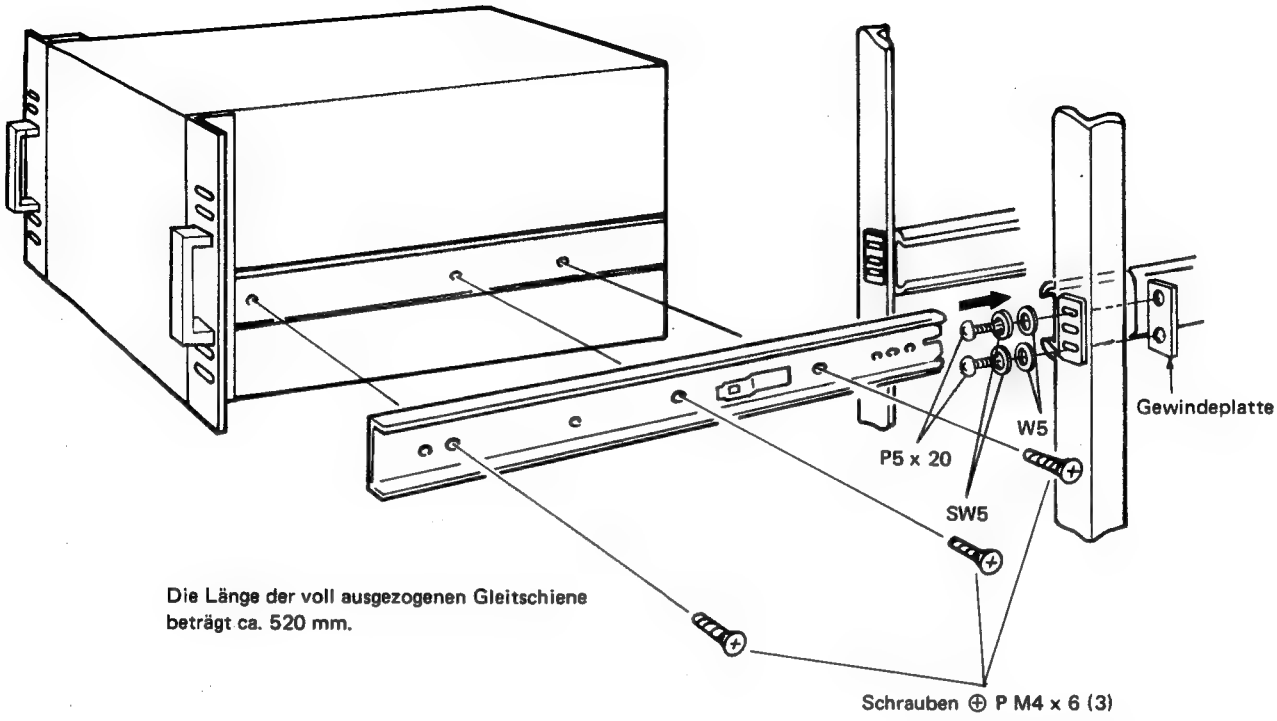
Dieser Monitor kann wie in der Abbildung unten gezeigt in ein 19-Zoll EIA-Normgestell eingebaut werden. Nehmen Sie vor dem Einbau die Standfüße (insgesamt 4) ab.

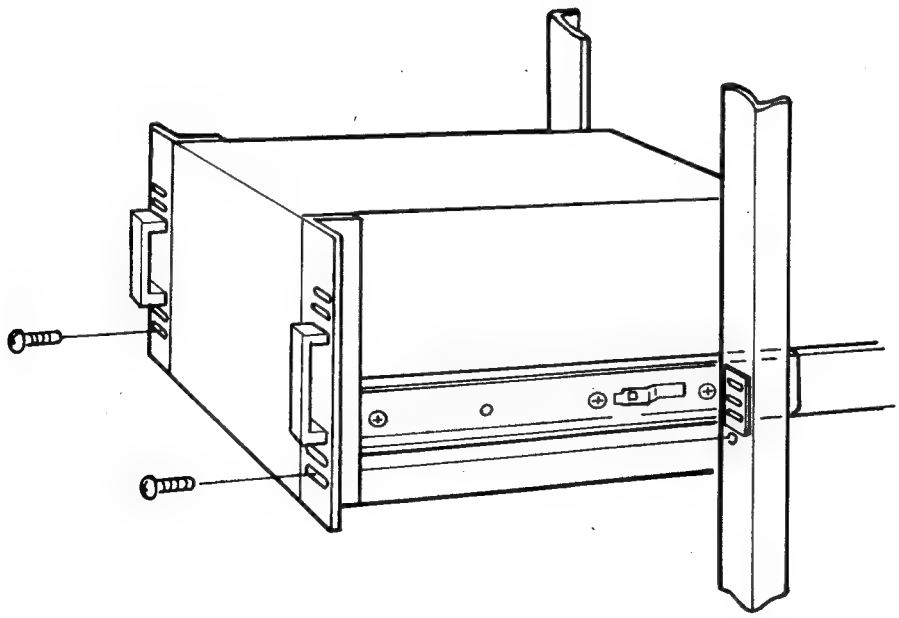


Abmessungen

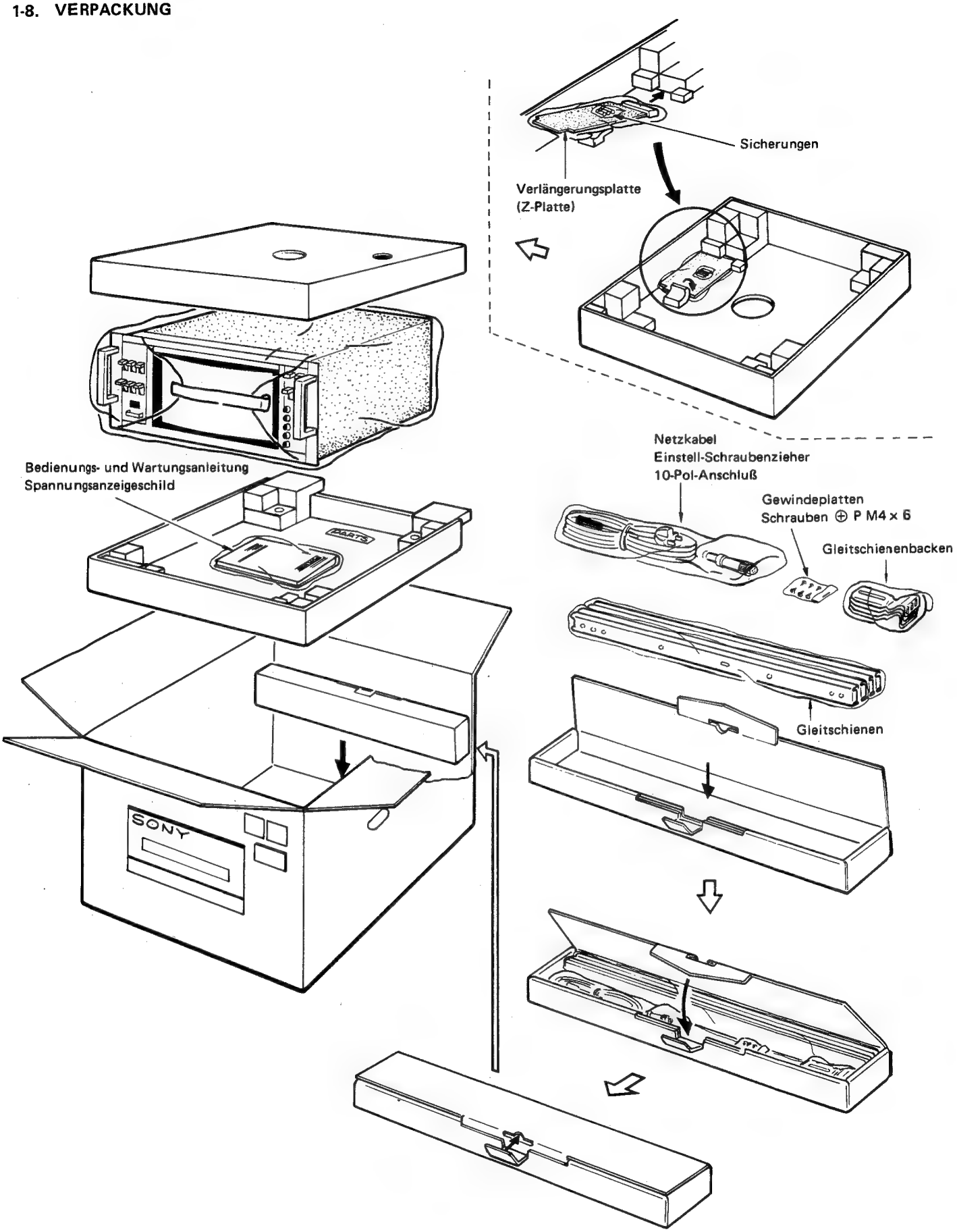


1-7. GLEITSCHIENENEINBAU



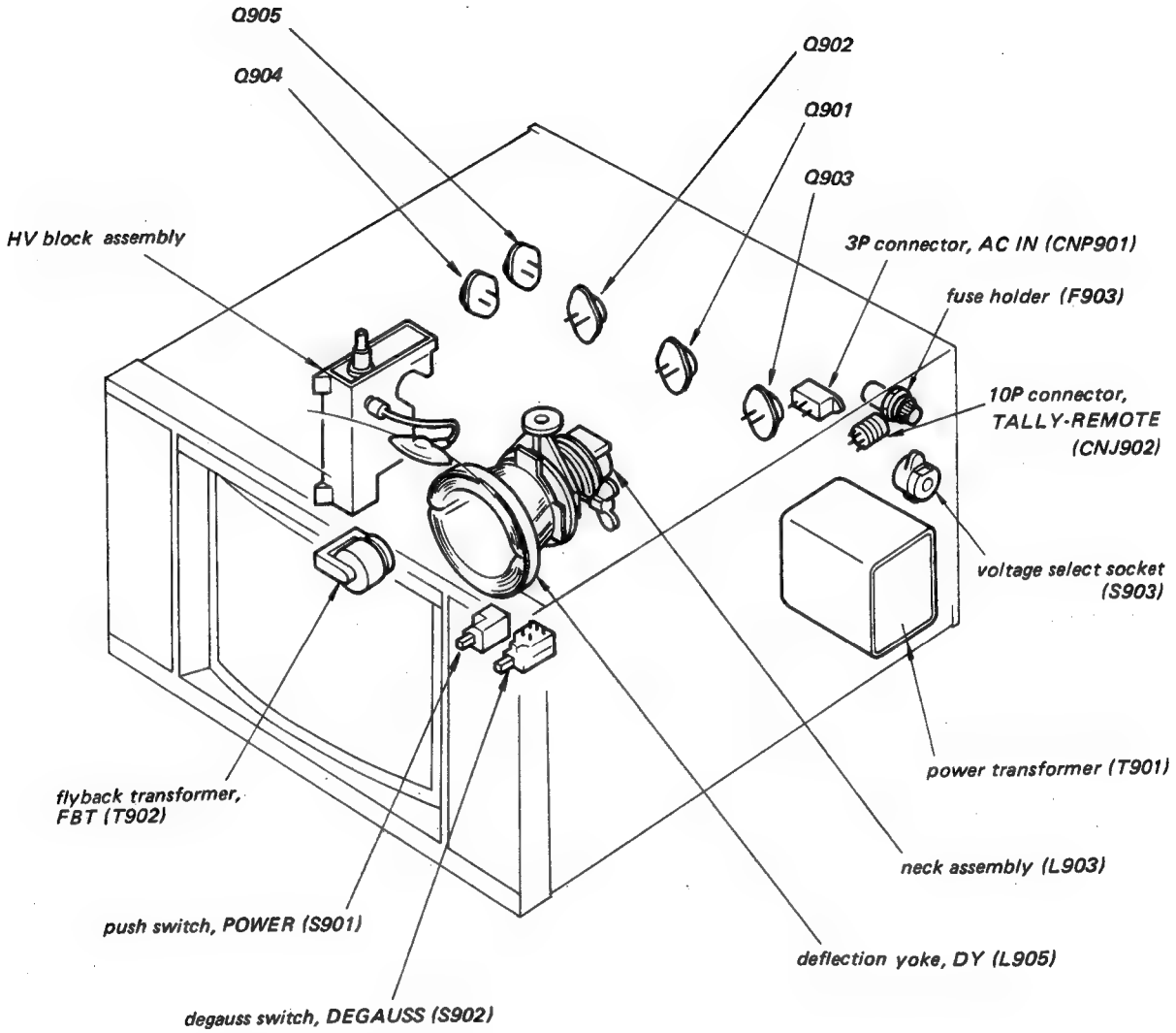


1-8. VERPACKUNG

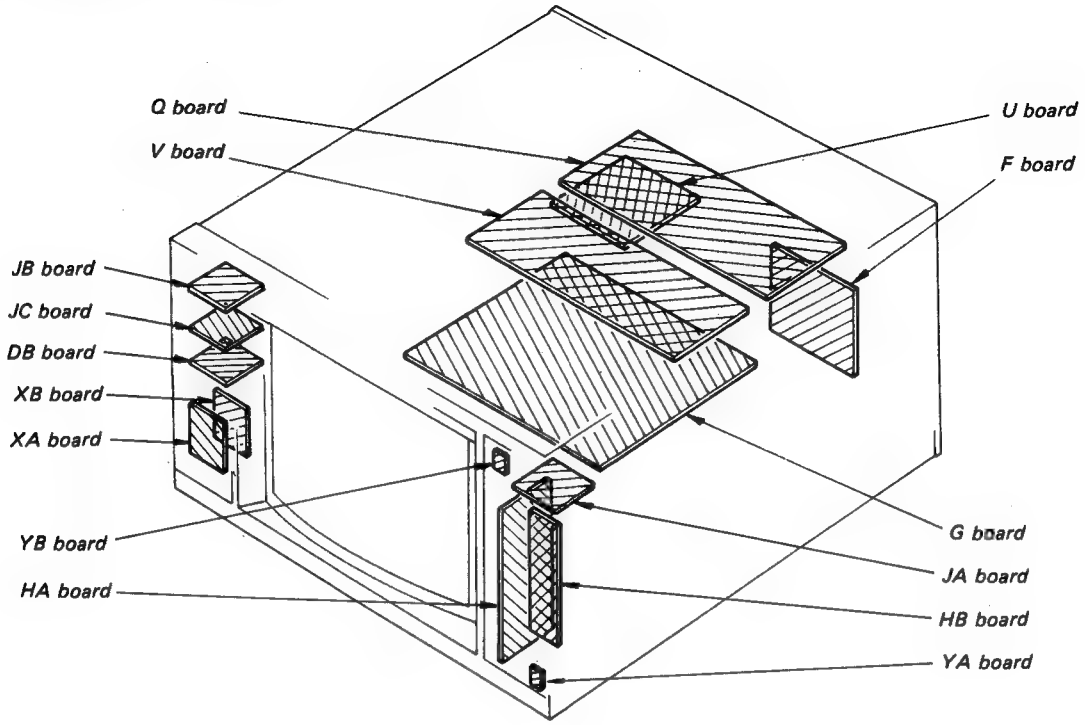


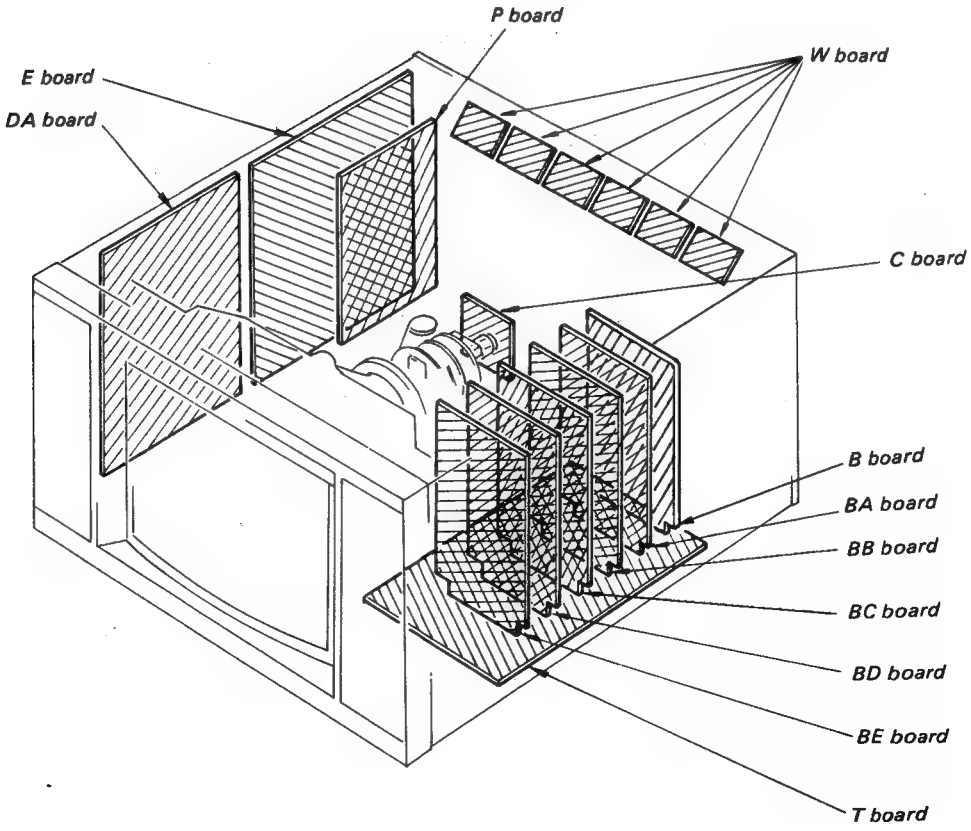
SECTION 2
OUTLINE

2-1. INTERNAL VIEW

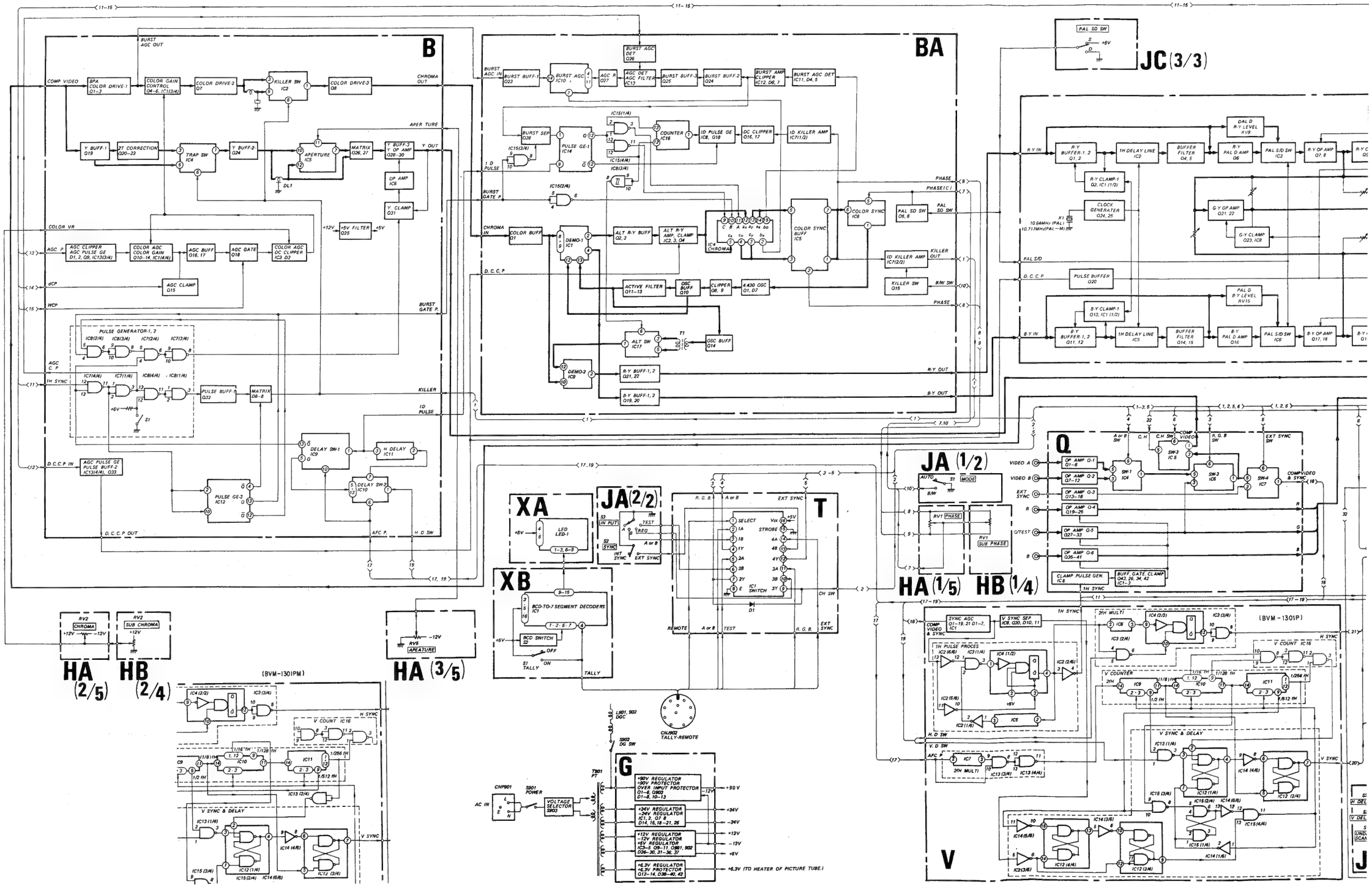


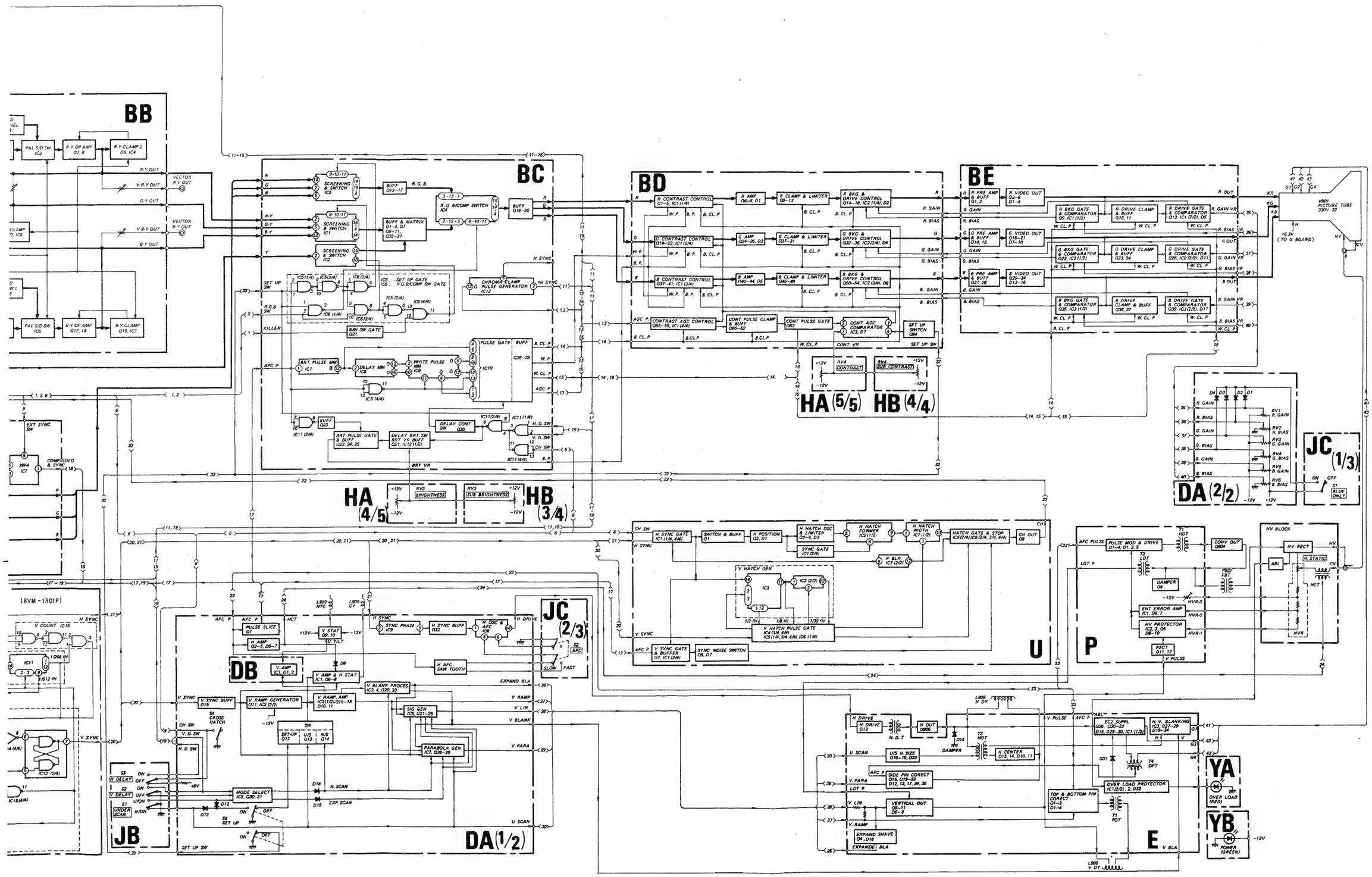
2-2. CIRCUIT BOARDS LOCATION





2-3. BLOCK DIAGRAM




BB
BC
BD
BE
HA (4/5)
HB (3/4)
HA (5/5)
HB (4/4)
DA (1/2)
DA (2/2)
DB
JB
JC (2/3)
JC (1/3)
U
P
E
YA
YB
PAL S/D SW IC3
R-Y OP AMP Q7, 8
R-Y CLAMP-2 Q9, IC4
PAL S/D SW IC6
B-Y OP AMP Q17, 18
B-Y CLAMP Q19, IC7
VECTOR R-Y OUT
VECTOR B-Y OUT
SCREENING & SWITCH IC3
SCREENING & SWITCH IC1
SCREENING & SWITCH IC2
BUFF Q12–17
BUFF & MATRIX Q9–11, Q32–37
R, G, B/COMP SWITCH IC6
BUFF Q18–20
CHROMA CLAMP PULSE GENERATOR IC12
SET UP SW
R.G.B SW
KILLER
BAW SW GATE Q31
PULSE GATE BUFF Q26–29
BRT. PULSE MM IC7
DELAY MM IC8
WHITE PULSE MM IC9
AFC. P
BUFF Q33
BRT PULSE GATE & BUFF Q22, 24, 25
DELAY BRT SW BRT VR BUFF Q21, IC12 (1/2)
DELAY CONT SW Q30
H. D. SW
V. D. SW
CH SW
B. P
BRT VR
R CONTRAST CONTROL Q1–5, IC1 (1/4)
G CONTRAST CONTROL Q18–23, IC1 (2/4)
B CONTRAST CONTROL Q37–41, IC1 (3/4)
CONTRAST AGC CONTROL Q55–59, IC1 (4/4)
R AMP Q6–8, D1
G AMP Q24–26, D3
B AMP Q42–44, D5
R CLAMP & LIMITER Q9–13
G CLAMP & LIMITER Q27–31
B CLAMP & LIMITER Q45–49
R BKG & DRIVE CONTROL Q14–18, IC2 (1/4), D2
G BKG & DRIVE CONTROL Q32–36, IC2 (2/4), D4
B BKG & DRIVE CONTROL Q50–54, IC3 (3/4), D6
CONT PULSE CLAMP & BUFF Q60–62
CONT PULSE GATE Q63
CONT AGC COMPARATOR IC3, D7
SET UP SWITCH Q64
RV4 CONTRAST
RV4 (SUB CONTRAST)
R PRE AMP & BUFF Q1, 2
G PRE AMP & BUFF Q14, 15
B PRE AMP & BUFF Q27, 28
R VIDEO OUT Q3–6 D1–4
G VIDEO OUT Q16–21 D7–10
B VIDEO OUT Q29–34 D13–16
R BKG GATE & COMPARATOR Q9, IC1 (1/2)
G BKG GATE & COMPARATOR Q22, IC2 (1/2)
B BKG GATE & COMPARATOR Q35, IC3 (1/2)
R DRIVE CLAMP & BUFF Q10, 11
G DRIVE CLAMP & BUFF Q23, 24
B DRIVE CLAMP & BUFF Q36, 37
R DRIVE GATE & COMPARATOR Q12, IC1 (2/2), D5
G DRIVE GATE & COMPARATOR Q26, IC2 (2/2), D11
B DRIVE GATE & COMPARATOR Q39, IC3 (2/2), D12
V901 PICTURE TUBE 330V 22
+6.3V (TO G BOARD)
RV1 R. GAIN
RV2 R. BIAS
RV3 G. GAIN
RV4 G. BIAS
RV5 B. GAIN
RV6 B. BIAS
S1 BLUE ONLY
RV3 BRIGHTNESS
RV3 SUB BRIGHTNESS
V. COUNT. IC16
1/256 1H
1/512 1H
EXT SYNC SW
SW-4 IC7
COMP VIDEO & SYNC
S3 H. DELAY
S2 V. DELAY
S1 UNDER SCAN
S4 CROSS HATCH
S5 SET UP
MODE SELECT IC5, Q30, 31
N. SCAN
EXP. SCAN
SET UP SW
L903 NTC
L905 CY
L906 H DY
L905 V DY
AFC P
PULSE SLICE Q1
H AMP Q2–5, D6–7
V. STAT Q9, 10
V. AMP IC1, D1, 2
V. AMP & H STAT IC1, D6–8
H SYNC PHASE IC9
H SYNC BUFF Q32
H OSC & AFC IC8
H AFC SAW TOOTH
V. BLANK PROCES IC2, 4, Q20, 33
V. RAMP GENERATOR Q11, IC2 (2/2)
V. RAMP AMP IC2 (1/2), Q15–18 D10, 11
SIG GEN IC5, Q21–25
PARABOLA GEN IC7, Q26–29
SW Q12, Q13, Q14
H SYNC GATE IC1 (1/4, 4/4)
SWITCH & BUFF Q1
H POSITION Q2, D1
H HATCH OSC & LIMITER Q3–6, D3
SYNC GATE IC1 (2/4)
H HATCH FORMER IC2 (1/2)
H BLK IC1 (2/2)
H HATCH WIDTH IC7 (1/2)
HATCH GATE & STOP IC5 (2/4), IC6 (2/4, 3/4, 4/4)
CH OUT Q8
V HATCH GEN
V HATCH PULSE GATE IC4 (3/4, 4/4) IC5 (1/4, 3/4, 4/4), IC6 (1/4)
V SYNC GATE & BUFFER Q7, IC1 (3/4)
SYNC NOISE SWITCH Q9, D7
H. DRIVE Q12
H OUT Q905
H. D. T
D14 DAMPER
T2 HOT
H CENTER Q13, 14, D10, 11
U/S H. SIZE Q16–18, D33
SIDE PIN CORRECT Q15, Q19–23 D12, 13, 17, 34, 35
VERTICAL OUT Q8–11 D6–9
EXPAND SHAVE Q4, D18
TOP & BOTTOM PIN CORRECT Q1–5 D1–4
EXPAND BLA
AFC PULSE
PULSE MOD & DRIVE Q1–4, D1, 2, 9
LOT P
T5 LOT
DAMPER D4
ENT ERROR AMP IC1, D6, 7
HV PROTECTOR IC2, 3, Q5 D8–10
RECT D11, 12
V PULSE
CONV OUT Q904
T902 FBT
HV BLOCK
HV RECT
H. STATIC
ABL
HCT
HVR-1
HVR-2
HVR-3
NVR
ECZ SUPPL Q26, Q30–32 D15, D25–30, IC1 (1/2)
H. V. BLANKING IC3, Q27–29 D19–24
D31
T6 OPT
OVER LOAD PROTECTOR IC1 (2/2), 2, D32
T1 POT
OVER LOAD (RED)
POWER (GREEN)
V BLA
(BVM-1301P)

SECTION 3
CIRCUIT DESCRIPTION

3-1. COLOR GAIN CONTROL & LUMINANCE AMPLIFIER (B BOARD)

CHROMA INPUT AMPLIFIER

Composite video signal applied to the base of Q1 passes through the series resonance circuit of C2, L1 and R6. After passing Q3, one component goes to the burst amplifier on the BA board and the other to the color gain control amplifier.

COLOR GAIN CONTROL

Pulse shaped from the horizontal flyback pulse is applied to the base of Q9. Since the pulse height varies in H and V delay modes, Q9 stabilizes the level by switching to drive IC13 (3/4). Q11 amplifies the output of IC13 (3/4) with gain controlled by IC1 (4/6). The output of Q11 which has passed Q14 is clamped by Q15, at the trailing edge of the horizontal flyback pulse. The clamped signal passes Q16 and Q17 and, after gated during the period of horizontal flyback pulse, comes to IC3 (1/2) which performs DC conversion and inverts phase, then to IC3 (2/2) which is a buffer amplifier, varying the DC voltage at pins 8 and 12 of IC1. IC1 is an FET whose drain and source are set at the same voltage. Because of this, changes of the gate voltage is equivalent to changes of the emitter resistance of Q11. Thus the gain of Q11 is controlled. This loop is a negative feedback loop and gain can be controlled by varying the DC voltage at pin 3 of IC3 (1/2). Color gain control is achieved by controlling gain by the same principles.

LUMINANCE AMPLIFIER

Composite video signal is applied to the base of Q19. In the black and white mode, it is applied to the video switch in IC4 from the emitter of Q19. Killer out voltage is applied to pin 6 of IC4. In the black and white mode, signal inputted to pin 3 of IC4 outputs from pin 1, then enters Q24. DL1 (Delay Line) is connected to the emitter of Q24 and forms an aperture correction circuit. The signal passed through DL1 is applied to pin 12 of IC5. The signal before entering DL1 and the signal which entered DL1 and was reflected (i.e., the signal passed DL1 twice) are added and applied to pin 10. IC5 generates only the component to be peaked, which is output through pin 7 of IC5. This signal is applied to Q27 and added to the component which has passed DL1 and applied to the base of Q26, at the collector of Q27. The resulting signal is applied to the base of Q28. The signal of Q28 emitter is applied to the OP amplifier (Q29 and Q30) via DL2. The OP amplifier output is gated in Q31 and dc-converted in IC6 (1/2) and the dc-converted signal controls Q29 emitter so that the output from Q28 is clamped to 0V during the horizontal sync period. The gate pulse applied to Q31 has a back porch phase.

4.43-MHz TRAP AND PHASE COMPENSATOR

During the color mode, the output signal of Q19 is applied to Q20 with subcarrier removed by the bridged T-trap of R51, C19, C20 and L4. The R56, L5, C23, Q21 and Q22 circuit makes up an active filter which performs phase compensation for the 4.43 MHz trap. Signal is applied to pin 3 of IC4 from Q23 and the output is available at pin 1.

H-DELAY SWITCHING PULSE GENERATOR

IC9, 10 and 11 generate a switching pulse to cope with the phase problem of the AFC pulse and sync signal. This problem arises since IC7 (4/4) NAND-gates the AFC flyback pulse and sync signal. The AFC pulse is applied to pin 10 of IC9 and pin 6 of IC10. In NOMAL mode, the AFC pulse, switched in IC10, passes to pin 7 and goes to pin 2 of IC11. A monostable multivibrator in IC11 generates pulse of approximately 50 μsec wide and, with reference to the phase of the pulse output at pin 3, causes the BA board to generate ID pulse. At the same time, with reference to the pulse phase, a monostable multivibrator in IC9 generates pulse of approximately 15 μsec wide in phase with SYNC to drive pin 13 of IC7 (4/4). In H-delay mode, pulse which rises at the trailing edge of the pulse applied to pin 10 of IC9 and lasts to the front porch of AFC pulse in the NOMAL mode is output at pin 5 of IC9 and applied to pin 5 of IC10, and the signal developing at pin 5 of IC10 passes pin 7 and pulse to be applied to pin 13 of IC7 (4/4) is generated in the same way as described above.

BURST GATE AND Y-CLAMP PULSE GENERATOR

The result of NAND operation made in IC7 (4/4) over SYNC and AFC pulse is applied to pins 2 and 10 of IC12. Burst gate pulses Q and $\overline{Q}$ appear at pins 4 and 13 of IC12, timed with reference to the trailing edge of SYNC. The component applied to pin 13 is supplied to the BA board as the burst gate pulse and the other is supplied to IC8 (2/4). From the pulse applied to pin 10, IC12 generates pulse of small width with reference to the trailing edge of SYNC and the output appearing at pin 12 is applied to pin 5 of IC8 (2/4) and NAND-gated with the burst gate pulse to generate a pulse with a slight delay from the trailing edge of SYNC. The output is NAND-gated with AFC pulse in IC7 (2/4) and the output of IC7 (3/4) gates Q31 to perform Y-clamp.

MATRIX, RESIDUAL PULSE, AND KILLER

D6, D7 and D8 form a pulse matrix. During the color mode, killer voltage supplied from the BA board is, DC-shifted by R103, 102 and 101, applied to pin 6 of IC2. During the color mode, the voltage at pin 6 of IC2 is approximately 0V and the chroma signal appearing at pin 3 of IC2 passes to pin 1 and goes to the BA board via Q8. If S1 (RESIDUAL SW) is turned off at this time, SYNC pulse developing at pin 13 of IC8 (4/4) drives Q32 and, applied to pin 6 of IC2, rejects the chroma signal only during the SYNC period, it makes up residual switch.
During the black and white mode, the killer voltage is approximately 5V at pin 6 of IC2 and the chroma signal is rejected at pin 1 of IC2. During the burst period negative pulse is applied to pin 6 of IC2 from pin 4 of IC12 via D7 and, as a result, IC2 allows signal to pass through only during the burst period.

COLOR DIFFERENCE SIGNAL CLAMPING PULSE

The color difference signal clamping pulse applied to IC13 (4/4) is inverted by IC13 (4/4) and outputs from Q33.

3-2. COLOR DECODER (BA BOARD)

BURST AGC

The chroma signal which has passed Q23 is amplified by IC10 and the output is applied to IC11 from pin 7 of IC10 via the switcher of IC4. In IC4, the signal passes from pin 2 to pin 15 but the burst signal alone is applied to IC11 since it is gated by the burst gate pulse. IC11 is an envelope detector. Signal which has passed the low-pass filter of R106, C51, L8, C52, L9 and C53 is amplified in IC12. With the burst signal, Q28 chips burst and this means that the burst signal is equivalently clamped at the base of Q28. This signal is subjected to phase inversion in Q24, Q25 and IC13 (1/2), then, gated by Q26 at the SYNC phase, to DC conversion in IC13 (2/2) to drive Q27. Q27 (FET) serves as the emitter resistor of IC10 and controls the gain of IC10 as its resistance changes with DC voltage. This loop performs AGC and level can be set with the DC voltage at pin 5 of IC13 (2/2).

4.43 MHz VCO

The subcarrier oscillator is a VCO (Voltage Controled Oscillator) which is composed of D1, X1 and Q7 and whose control range is approximately within ±600 Hz. Q8 and Q9 form a limiter which removes amplitude variation from the output of the 4.43 MHz oscillator. To the collector of Q9 connected is a bridged T-trap whose center frequency is 4.43 MHz to reject sidebands.

APC

APC detects the burst of ALT R-Y signal and controls the 4.43 MHz OSC. Chroma signal applied to the base of Q1 is demodulated by IC1. The output comes from pin 2 of IC1 to IC2 via Q2, a low-pass filter composed of L, C and R, then Q3. The output of IC2, gated during the SYNC period by Q4, is subjected to DC conversion in IC3, then returns to IC2 through a feedback clamp circuit. The level is approximately 0V during the SYNC period.

The output of IC2 is applied to pins 5 and 12 of IC4 whose output is sampled & held at the peak value of burst in intervals of 2H only during the burst period. As a result, DC voltages of opposite signs appear at pins 3 and 5 of IC5 and these voltages are added together with R28 and R29. The midpoint voltage of R28 and R29 is 0V. This voltage is amplified and phase-inverted in IC6 (2/2) and applied to active filter IC6 (1/2). The output of IC6 (1/2) controls the 4.43 MHz VCO. Thus an APC loop is formed.

BURST CLAMP AND ID PULSE

The burst clamp pulse switches the burst pulse, obtained in the burst AGC, in Q28. The emitter of Q28 is connected to pin 8 of IC15 (3/4) so Q28 is activated at the burst gate pulse period. The burst pulse is applied to IC14 during the burst clamp pulse. The output of Q28 is applied to pin 1 of IC14 to shape the pulse width, and the output of IC14 developing at pin 13 is applied to pins 1 and 13 of IC15. On the other hand, the ID pulse is applied to pin 9 of IC14 and, after compensating time, IC14 compensates the waveform so that the trailing edge come to the center of the SYNC period. The output developing at pin 12 of IC14 is applied to pin 4 of IC8 (2/4). The frequency of the output developing at pin 6 of IC8 (2/4) is halved by a flip-flop in IC16 and its outputs appearing at pins 12 and 3 drive pins 12 and 2 of IC15 to gate the burst pulse. The outputs appearing at pins 3 and 11 of IC15 are pulses rising in intervals of 2H. These pulses gate IC4 to sample & hold the burst signal of APC.

ID COMPENSATION

When failure in ID has happened, the voltage developing at pin 2 of IC7 (1/2) inverts and IC7 (1/2) outputs +12V, causing IC8 (4/4) to oscillate through R79 and C33. The output of IC8 (4/4) is waveformshaped in IC8 (1/4) and differentiated by C34 and RV4 to drive Q18. The output pulse of Q18 has a width slightly larger than 1H. The output of IC8 (2/4) is the ID pulse but with pulse tops reduced by one. ID compensation is performed by inverting the phase of 2H pulse of IC16.

DEMODULATOR

IC1 demodulates ALT R-Y and B-Y signals and IC9 R-Y signal. The subcarrier of ALT R-Y signal is detected at the phase which has passed the phase shifter consisting of Q11, Q12, Q13, RV3, R61 and C22, and the subcarrier of B-Y signal is detected at the output phase of Q10. For R-Y signal, the output of Q13 is passed through Q14, then transformer T1, and subcarriers of opposite polarities appear at pins 3 and 5 of IC17. To pin 6 of IC17, applied is 2H pulse whose phase is compensated with ID pulse. A subcarrier signal whose polarity inverts in intervals of 1H appears at pin 1 of IC17. Using this subcarrier, IC9 demodulates V-signal. The output signals, B-Y and R-Y, are applied to Q19 and Q21, then via a low-pass filter to Q20 and Q22 to drive the BB board.

PHASE CIRCUIT

The PHASE circuit operates only in the PAL-S mode. In this mode, the base of Q5 is +5V, Q6 is turned off, and the valtage supplied through R33 is applied to pin 5 of IC6 (2/2). The voltage supplied through R33 is the output of IC5 which goes to IC6 via the HA and HB boards. At pins 1 and 7 of IC5, DC voltages whose polarity inverts appears. These voltages are potentiometrically supplied to R33 to operate the PHASE circuit.

KILLER CIRCUIT

The killer detects the voltage developing at pin 1 of IC5 (1/2) to drive pin 6 of IC7 (2/2). The output of IC7 at pin 7 varies approximately ±12V.

3-3. COLOR DIFFERENCE CLAMP, 1H DELAY LINE, AND MATRIX (BB BOARD)

1H DELAY LINE

The demodulated R-Y (B-Y) signal passes Q1 (Q11) buffer, is clamped at the clamp circuit consisting of Q2, Q3 and IC1 (Q12, Q13, IC1) and is input to CCD IC2 (IC5). The 1H delayed signal passes Q4 (Q14) buffer and is output after the clock component is removed at low pass filter Q5 (Q15).

PAL-D Matrix and PAL S/D Switch

Part of the demodulated R-Y (B-Y) signal is input to video switch IC3 (IC6) pin ⑤ as a PAL-S signal, and the other part is added to the 1H delayed signal at R19, R20 and Q6 (R56, R57, Q16) and is input to IC3 (IC6) pin ③ as a PAL-D signal. The front panel PAL S/D switch signal is connected to IC3 (IC6) pin ⑥, and PAL-S or PAL-D is selected and output to pin ①.

R-Y (G-Y, B-Y) AMPLIFIER

The PAL S/D switch output is input to the amplifier composed of Q7 and Q8 (Q17, Q18), is amplified and output as an R-Y (B-Y) signal. The G-Y signal is obtained by matrixing the R-Y and B-Y output at Q21 and Q22, then is amplified and output. Also, at this time each signal is clamped by Q9 and IC4 (Q19, IC7) (Q23, IC8) and is DC reproduced.

CCD CLOCK OSCILLATOR

Approximately 10MHz oscillation output is obtained from the x'tal oscillator composed of X1 and Q24, the higher harmonic is removed at LPF Q25, and input is to CCD IC2 (IC5).

3-4. R, G, & B SWITCHERS (BC BOARD)

RGB MODE

The Red, Green, and Blue signals are inputted to pins 12, 2, and 5 of IC3 and outputted from pins 14, 15, and 4 respectively. The Red signal is applied to pin 1 of IC4 via the Q12 and Q13 circuit. The Green signal is fed to pin 13 of IC4 through Q14 and Q15. The Blue signal is supplied, through Q16 and Q17, to pin 3 of IC4.

The decorded color difference signal and the Y signal are cut off by IC1 and IC2 respectively. At this time +5 V bias is applied to each of pins 9, 10, and 11 of IC1 and pin 10 of IC2.

COMPOSITE VIDEO MODE

The decoded color difference signals of R-Y, G-Y, and B-Y are inputted to pins 2, 5, and 12 of IC1 and outputted from pins 15, 4, and 14 respectively.
The R, G, and B signals inputted to IC3 are cut off when the +5 V bias is applied to pins 9 through 11 of IC3.
The Y signal is inputted to pin 2 of IC2 and outputted from pin 15.
The R-Y signal, output from pin 15 of IC1, goes through Q1 and Q32 and becomes the ouput of Q35. The Y signal outputted from pin 15 of IC2 goes through Q7 and is matrixed with the R-Y signal, output of Q35, by R29 and R10. The red signal is supplied to pin 2 of IC4 via Q9.
Similarly the G-Y signal is matrixed with the Y signal in R17 and R30, and the B-Y signal is matrixed with in R24 and R31. The Green signal is inputted to pin 12 of IC4 and the Blue signal to pin 5.

R, G, and B SWITCHERS

The R, G, and B signals applied to IC4 are outputted from pins 15, 14, and 4 of IC4 respectively. When 0 volt is applied to pins 9, 10, and 11 of IC4, the composite system R, G, and B signals are outputted and when +5 volts is applied to them, the RGB system signals are outputted.

SCREENING

Screening is performed on the transit signal in IC3 and IC2 during the horizontal blanking period, which is for inserting the pulses for brightness and contrast control. The screening level is set to 7.5 IRE of the input signal by RV2 and RV1.
The pulse which is +5 V during the horizontal blanking period and 0 V in other period is applied to pins 9, 10, and 11 of IC3. The +5 V is also applied to pin 10 of IC2.
Similarly the pulse which is +5 V during the horizontal blanking period is applied to pin 10 of IC2 and the +5 V is applied to pin 9, 10, and 11 of IC3 in the COMP system mode.

PULSE GENERATOR

Various pulses are produced from the wave-shaped horizontal blanking pulse in the monostable multivibrator IC.
The waveform-shaped horizontal blanking pulse is applied to pin 1 of IC7 (1/2) and approx. 0.4 μS pulse is produced on the basis of the front edge change of the blanking pulse by R63, C19, and IC7 (1/2). The produced pulse appears at pin 4 of IC7 (1/2). The pulse is applied to pin 10 of IC7 (2/2). Approx. 3.3 μS pulse is produced on the basis of the back edge change of the applied pulse by R64, RV3, C20, and IC7 (2/2), and appears at pin 12 of IC7 (2/2). This pulse is shaped to a positive polarity pulse of approx. 7.5 Vp-p by IC10 (2/4), R65, and R66, and the Q26 output becomes the bright clamp pulse.
Similarly R68, C21, and IC8 (1/2) produce a pulse of approx. 0.4 μS on the basis of the back edge change of the pulse applied to pin 12 of IC7 (2/2) and the produced pulse appears at pin 4 of IC8. Then R69, C22, and IC8 (2/2) produce a pulse of approx. 0.4 μS on the basis of the back edge change of the pulse produced in IC7 (2/2) and the resultant pulse appears at pin 2 of IC8 (2/2). R70, RV4, C23, and IC9 (1/2) produce a pulse of approx. 3.3 μS on the basis of the back edge change of the pulse at pin 2 of IC9 (1/2) and the produced pulse is obtained at pin 4 of IC9 (1/2). This pulse is waveform-shaped in IC10 (1/4) and a positive polarity white clamp pulse of approx. 7.5 Vp-p is obtained as the output from Q28.
R74, C24, and IC9 (2/2) produce a pulse of approx. 4.5 μS on the basis of the front edge change of the output pulse of pin 15of IC8 and the pulse appears at pins 5 and 12 of IC9 (2/2). But the back edge change of this pulse is determined in IC5 (3/4) by the back edge change of the input blanking pulse.
The output from pin 5 of IC9 goes to IC10 (3/4) for a waveform shaping and becomes a negative polarity white pulse of approx. 4.5 Vp-p as the Q27 output. The pin 12 output of IC9 (2/2) and the IC5 (4/4) output are AND-gated and wave-shapted in IC10 (4/4) in order to be a negative polarity pulse of approx. 4 μS, 1 Vp-p for the contrast control on the basis of the front edge change of the input blanking pulse as the Q29 output.
The input blanking pulse goes through IC11 (3/4) and Q23, gated in Q22 only during the horizontal blanking period, and becomes the bright pulse after it passes through Q24 and Q25. The level of this pulse is equal to the one of the pin 1 output of IC12 and based on the dc voltage at pin 3 of IC12 (1/2).
Pin 3 of IC12 (1/2) is connected to RV3 on the HA board and RV3 on the HB board via R93 and the dc voltages of these variable resistors control the pulse level of Q25 output.

3-5. VIDEO OUT (BD and BE BOARDS)

CONTRAST CONTROL (BD BOARD)

The wave-shaped horizontal flyback pulse is applied to the base of Q55. Variable resistance element IC1 (4/4) is used as the emitter resistor of Q55 and the gain of the amplifier Q55 is controlled by varying the resistance value of IC1 (4/4).
The output of Q55 goes to Q59 and to Q60 where it is clamped during the horizontal flyback pulse period. The clamped signal goes through Q61 and Q62, is gated in Q63 immediately after the horizontal flyback pulse. The gating signal is converted to dc in IC3 (1/2), goes through IC3 (2/2), and applied to pin 8 of IC1 (4/4), IC1 (4/4) controls the Q55 gain. The dc output from IC3 (2/2) is connected to pin 8 of IC1 (1/4), pin 12 of IC1 (2/4), and pin 3 of IC1 (3/4), which enables the simultaneous gain controls of the R, G and B signals inputted to the bases of the amplifiers Q1, Q19 and Q37 respectively.
The dc output of IC3 (2/2) varies depending on the dc voltage at pin 3 of IC3 (1/2) and can be controlled with RV4 (CONTRAST) on the HA board and RV4 (SUBCONTRAST) on the HB board.

WHITE PEAK LIMITER (BD BOARD)

The bright pulse and white pulse obtained by the waveform-shaping of the horizontal flyback pulse are added to the gain-controlled Red output of Q1 via R14 and R15. The resultant signal goes through Q5 and operation amplifier Q6, Q7, and Q8, and clamped in Q9. The clamp is performed at the bright pulse period. The clamped signal goes to the limiter circuit consisting of Q11 and Q12 via Q10, the limiter circuit cuts of the video signal above the reference level. The above operation is applied on the Green signal of Q19 and the Blue signal of Q37.

SET-UP SWITCH (BD BOARD)

The Q64 base is connected to ground by S5 (SET-UP switch) on the DA board in the SET-UP mode, and the output dc voltage of IC3 (2/2) is increased and the amplification gains of Q1, Q19 and Q37 is minimized. Thus each of the R, G, and B outputs is stopped.

R,G, AND B BACKGROUND CONTROL AND VIDEO OUTPUT AMP (BD AND BE BOARDS)

The Red signal of the output from the limiter circuit consisting of Q11 and Q12 on the BD board enters the base of the amplifier Q14 via Q13. The gain of the Q14 output is controlled in IC2(1/4) and its dc level is controlled in Q15. The output is supplied to Q18, amplified in Q1 on the BE board, and enters the cascade NF amplifier Q3, Q4, Q5, and Q6 via Q2 on the BE board.
The output from Q6 on the BE board goes, through the BUFFER amplifier Q7 and Q8, to the R cathode of the picture tube.

The output signal from Q7 and Q8 is divided by R21 and R22 and gated in Q9 during the bright pulse period. The gated voltage is converted to a dc voltage in IC1 (1/2) and applied to the base of Q15 on the BD board. These circuits form an NF loop. The bright pulse dc level of the output from Q7 and Q8 is controlled by the dc voltage at pin 5 of IC1 (1/2). The Green signal, output from Q20 and Q21 on the BE board and the Blue signal output from Q33 and Q34 are processed in the same manner as in the Red signal.

R,G, AND B DRIVE CONTROL (BD AND BE BOARDS)

The Red signal output from Q7 and Q8 on the BE board is voltage-divided by R31 and R32. It goes through Q10 and is clamped in Q11 during the bright pulse period. The white pulse period of the clamped signal is gated in Q13. The gated voltage is converted to a dc voltage in the R39, C15, and IC1 (2/2) circuit, and applied to variable resistance element IC2 (1/4) on the BD board, the resistance of IC2 (1/4) determines the amplification gain of Q14.

The above circuit forms the NF loop like the background control circuit. The white pulse level of the output signal from Q7 and Q8 on the BE board is controlled by the dc voltage at pin 3 of IC1 and the signal level is also controlled at the same time. The processings of the Green signal output from Q20 and Q21 on the BE board and the Blue signal output from Q33 and Q34 are the same with that of the red signal.

3-6. VERTICAL DEFLECTION AND AFC (DA BOARD)

VERTICAL RAMP WAVE GENERATOR

The vertical trigger pulse is applied to the emitter of Q19 from pin 5 of the connector D-12. The signal whose waveform was shaped in Q19 is supplied to the base of Q11. Q11 and IC2 (2/2) form a ramp generator. When the vertical trigger pulse is not applied to the Q11 base, −12 V power is applied through R42 to the integrator consisting of R42, C25, and IC2 (2/2) and the power is integrated. When the vertical trigger pulse is applied to the base of Q11, C25 is shorted through R43 and the voltages at pin 6 and pin 7 of IC2 (2/2) become the same. The voltage at pin 6 is equal to the one at pin 5, i.e., 0 V. Then the sawtooth wave whose trigger period is 0 V is obtained at pin 7 of IC2 (2/2) as the vertical ramp.

VERTICAL AMPLITUDE SWITCH

The ramp signal obtained at pin 7 of IC2 (2/2) varies the V. size by switching Q12 in the SET-UP mode, Q13 in the UNDERSCAN mode, or Q14 in the NORMAL SCAN mode. The output from IC2 (2/2) drives IC2 (1/2) whose output from pin 5 of connector D-8 drives the vertical out circuit on the E board.

VERTICAL SINE WAVE GENERATOR

The output from pin 1 of IC2 (1/2) is integrated in R93 and C40 to be a parabolic waveform. It is amplified in IC6 (1/2) and becomes a sine wave after passing through integrator consisting of R103, C45, and IC6 (2/2). The sine wave is supplied to the vertical out circuit on the E board from pin 6 of connector D-8 for linear correction. Q22, Q23, and Q24 are for varying the gain of IC6 (1/2) in the NORMAL, UNDERSCAN, and EXPAND SCAN modes respectively.

VERTICAL BLANKING

The pulse width of the vertical blanking is changed in each of the NORMAL, UNDERSCAN, and EXPAND modes. In the NORMAL mode, the vertical trigger pulse of D-12 drives Q20 and then drives the monostable multivibrator in IC4. The pulse width of this monostable multivibrator is longer a little than the one of the vertical trigger pulse. The pin 3 output of IC4 is supplied to the blanking circuit on the E board from pin 3 of connector D-8 and drives Q21 to clamp pin 3 input of IC6 (1/2) which is the parabola generator for the vertical sine wave generator, Q21 makes pin 3 zero V during the vertical trigger period. The vertical trigger pulse gates Q25 and clamps the vertical trigger period of the vertical sine wave generator. In the UNDERSCAN mode, the operation is identical to that in the NORMAL SCAN mode but Q33 is in the non-conductive state and the output pulse width of IC4 is narrow. The pulse width of IC3 is determined by R71 and C34, and the one of IC4 by R78, C36, and C71.

Since the IC2 (1/2) output is large in the EXPAND mode, the output is clipped by the voltage determined in the bases of Q15 and Q16 through D10 and D11. When Q15 and Q16 conduct, the output is matrixed in the Q18 base and the signal switched by Q18 drives IC3. IC3 detects the negative going and acts as a monostable multivibrator feeding the extra pulse generated in the EXPAND mode through R75 for canceling the pulse with the vertical trigger pulse, the output of IC3 drives IC4, and IC4 produces the blanking pulse.

PARABOLA WAVE FOR HORIZONTAL SIDE PINCUSHION

The parabola waveshape signal for the side pincushion correction is produced as follow. The sawtooth wave of IC2 (1/2) is integrated by C46 and R109. The signal goes to IC7 (2/2) and is phase-inverted in IC7 (1/2). The parabola waveshape signal drives the pincushion correction circuit from pin 2 of connector D-8.

VERTICAL PARABOLA WAVE FOR Y BOW CORRECTION

The output from IC2 (1/2) is integrated by IC1 (2/2), R23, and C21 to be the parabola wave. The IC1 (2/2) output goes through IC1 (1/2), Q7, and Q8 to the convergence yoke (CY) and returns to R30. In the dc loop, the pin 2 of IC1 (1/2) is connected to similar loop of the signal and this loop returns to R30. The circuit forms the NF loop. The signal corrects the Y bow convergence and the dc loop acts as follow. The horizontal parabola wave supplied from connector D-5 to the horizontal convergence transforemer (HCT) in the high voltage block is rectified in D8. The bias voltage of IC1 (1/2) is varied with the voltage in order to vary the current flow in the convergence yoke for preventing a convergence loose at the center on the picture tube.

PARABOLA WAVE FOR HORIZONTAL CONVERGENCE

The horizontal flyback pulse from pin 4 of connector D-7 is integrated in L1 and C15 and becomes the parabola wave. Similarly the sawtooth wave is produced in L2 and C14. The produced sawtooth wave and the parabola wave are mixed together in the base of Q3. The positive or negative sawtooth wave is applied to the Q3 base depending on the position of adjustable resistor RV8. The Q3 output is amplified in push-pull amplifier Q4 and Q5 and outputted from connector D-5 in order to drive the horizontal convergence transformer (HCT) in the HV block.

H. AFC and PICTURE PHASE CIRCUIT

The H. sync signal from pin 6 of connector D-12 drives pin 2 of IC9. IC9 is a monostable multivibrator making the thin pulse determined by R145, RV26, and C66 on the basis of the front edge change of the H. sync. The pin 13 output of IC9 drives pin 9 of IC9 and a pulse of 5 μS width is produced by RV25, R144, and C65. This pulse drives the emitter of Q32 in order to drive pin 1 of IC8 for H. AFC. The H. pulse phase to AFC can be varied by adjusting resistor RV26 and the deflection phase varies. Thus the picture phase on the picture tube can be adjusted. Regarding the H. AFC, the horizontal flyback pulse signal is applied to the L4, C63, R130 circuit and to the L3, C54, R129 circuit. The signals from these two circuits go through connector D-13 and selected by the AFC switch. The selected one is applied to pin 4 of IC8. The amplitude of the signal passed through the L4, C63, R130 circuit is smaller than that of the signal passed through the L3, C54, R129 circuit. Consequently the loop gain decreases and AFC becomes slow. The time constant of H. AFC is varied by connecting C58 and C59 in parallel in order to vary the frequency characteristic.

SCANNING SWITCH

The mode switching of NORMAL, UNDER, and EXPAND SCANNING is performed as follows. The voltage selected with the switch connected to connector D-11 is applied to the NAND circuit in IC5 and the logic circuit consisting of Q30 and Q31 so as to control transistors Q27, Q28, Q29, Q22, Q23, and Q24. Thus the scanning size can be controlled.

3-7. Y. TILT AND V. TILT CORRECTION CIRCUITS (DB BOARD)

The V cycle sawtooth wave current flows into the CY coil for the correction of the vertical convergence. The correction value of the vertical convergence is changed by turning the RV4 and the vertical convergence of the top and bottom of the picture tube is corrected by flowing the V cycle sawtooth wave current into the neck twist coil (N.T.C.). This correction value is changed by turning the RV 1 through 3.

3-8. HORIZONTAL AND VERTICAL DEFLECTION OUTPUT CIRCUIT (E BOARD)

HORIZONTAL DEFLECTION CIRCUIT

The horizontal deflection switching signal synchronized with the H. sync of the input signal is connected to pin 1 of connector E-3 from the DA board.

This switching signal enters the base of horizontal deflection drive transistor Q12 and its output is connected to the base of the H. OUT transistor on the DEF heat sink from T2 HDT (horizontal drive transformer).

The collector of the H. OUT transistor is connected to the horizontal deflection yoke and T3, HOT (Horizontal Output Transformer). The HOT supplies the dc power supply to the H. OUT transistor. One of the secondary winding of the HOT produces the horizontal center adjusting power supply in D10 and D11 and the horizontal center is adjusted in the Q13, Q14, and RV4 circuit.

The other winding is the AFC pulse winding and connected to the DA board via connector E-3. Q16 through Q18 vary the supply voltage to the HOT and lower it approx. 10% in the UNDERSCAN mode.

SIDE PINCUSHION DISTORTION CORRECTION CIRCUIT

The parabola signal with V cycle comes from pin 2 of connector D-8 to pin 2 of connector E-2. The parabola signal and the AFC pulse from the HOT T3 are supplied to the P.W.M. (Pulse width Modulator) circuit arranged by Q19 through Q22 and the horizontal sync signal modulated with the V cycle parabola signal is applied to the base of Q23.

The current flow in the horizontal deflection yoke goes through the L6 horizontal linearity coil and S-shape correction capacitors C24 and C25, and flows through the L7 horizontal pincushion coil. The switch consisting of D13 and Q15 is connected in parallel to L7. The output from Q23 is connected to the gate of Q15. The energy across L7 in the horizontal return trace interval becomes parabolic because Q23 is modulated with the V cycle and switched, the current resonates at the H cycle by C43 and L7 in the horizontal deflection period, is composed with the horizontal deflection yoke current, and corrects the side pincushion. At the same time, the S-shape correction current is modulated with the V cycle in order to correct linearity at the center screeen.

VERTICAL DEFLECTION CIRCUIT

The V cycle sawtooth wave at pin 5 of connector E-2 and the V cycle linearity correction waveform at pin 6 are composed in RV3 and amplified in the differential amplifier consisting of Q5 and Q6. The amplified signal is amplified in the SEPP amplifier arranged with Q7 through Q11 and supplied to the vertical deflection yoke from E-9. The current flowed the vertical deflection yoke is grounded through R31. The voltage at R31 is fed back to the differential amplifier in the first stage.

The H cycle pulse is supplied to the point between D7 and D8 from the P board via C12 and the voltage processed by the voltage doubler rectifier is stored in C13 by D7 and D8 in the later half period of the trace. This voltage is utilized as the power supply for the back pulse appears in the return trace interval of the vertical deflection yoke, so that the return trace interval is shortened.

TOP and BOTTOM PINCUSHION CORRECTION CIRCUIT

D1 through D4 form the balanced modulator circuit. The AFC pulse is integrated in L1 and C1, and the phase inverted signals are supplied to the balanced modulator consisting of D1 through D4 from the emitter and collector of Q1 as the subcarrier and the V cycle sawtooth wave is inputted as the modulation wave. The gain adjustment is done with RV2 and the top and bottom balance is performed with RV1. The balanced modulated signal is amplified in Q2 and Q3 and supplied to the vertical deflection yoke from the pincushion transformer (T1). The H. cycle resonance circuit is formed by the secondary impedance of L2, C8, and T1 and the H cycle phase of the correction waveform is adjusted.

G1 BLANKING CIRCUIT

The AFC pulse is shaped in L10 and C30 and the H blanking is produced in the comparator IC3. (The blanking width can be adjusted with RV10.) The resultant is the H blanking signal and it is applied to the base of blanking output transistor Q29. The voltage of the blanking signal form pin 3 of E-2 is shifted by Q28 and D22 and the blanking signal is applied to the base of Q29. The output from Q29 is clamped by C35 and D24 and supplied toG1 from pin 4 of the E-6 connector.

G2 (SCREEN) and G4 (FOCUS) CIRCUITS

The back pulse of the H. OUT is rectified in D25 to produce approx. 800 V dc voltage and approx. 580 V is obtained at the emitter of Q30. This voltage is supplied to RV8 and supplied to G4 through the secondary winding of DFT (Dynamic Focus Transformer). The focus is adjusted with RV8. The horizontal sync parabola voltage obtained by integrating the AFC pulse is supplied to the primary of the DFT and added to the focus voltage on the secondary in order to perform the dynamic focus.

The emitter voltage of Q30 goes to the G2 voltage regulator consisting of Q31, Q32, and IC1 (1/2) and the stable voltage is supplied to G2 from the emitter of Q31. The voltage can be controlled with RV9.

ABL CIRCUIT

The high tension current detected in the HV block goes to the buffer circuit at pin 3 of IC2 (1/2) through R89. The output voltage enters the zero cross comparator in IC2 (2/2). When the high tension current increases up to approx. 800 μA, the pin 7 output of IC2 (2/2) becomes approx. 10 V from −10 V and energizes the overload lamp (LED) connected to the E-7 connector. At the same time, the voltage amplified in the inverting amplifier in IC1 (2/2) enters the inverting input of the error amplifier of G2 regulator, pin 3 of IC1 (1/2) and lowers the G2 voltage, so that the high tension current is maintained constant.

3-9. POWER SUPPLY CIRCUIT DESCRIPTION (G BOARD)

+12 V POWER SUPPLY

+12 V supply is used as the reference voltage for −12 V and +5 V power supply. The +12 V with a low impedance and stability is obtained from IC3 as a correct output. IC3 contains a temperature compensated reference voltage error amplifier, a regulator circuit, and a current flow limiter.

The +12 V is adjusted with RV3 whose movable slider is connected to the inverting input (pin 4) of the differential amplifier in IC3. The non-inverting input (pin 5) of the differential amplifier is connected to the reference voltage straight from pin 6 via R38. The amplified output in the differential amplifier is obtained and drives Q9. The output of Q9 drives series regulator transistor Q902.

A potential difference occurs across R42 because of the current flow in R42 and the difference appears at pin 2 (current limit) and pin 3 of IC3 (current sense). The current flow limiter functions when the potential difference between pins 2 and 3 reaches 0.7 V. The C28, R37, and C29 circuit between pins 11 and 13 of IC3 is to prevent the high-frequency oscillation of the +12 V line.

R69 is the adjusting resistor to determine the maximum value of −12 V output.

+5 V POWER SUPPLY

+5 V power is supplied from IC4 as the Vcc power supplies for the ICs used in the circuitry. The reference voltage obtained by resistive division of the +12 V which is adjusted precisely is inputted to the non-inverting input of the differential amplifier circuit (pin 5 of IC4). The inverting input of the differential amplifier circuit supplies the +5 V output voltage to pin 4 via R47. The output from pin 10 drives Q10 and the +5 V output voltage can be obtained from the emitter of Q10.

The current flow limiter detects a potential difference with the current flow in R48 and initiates its operation when the potential difference reaches approx. 1.4 V.

C30 inserted between pins 4 and 13 of IC4 is for the high-frequency oscillation prevention of the +5 V line.

−12 V POWER SUPPLY

The −12 V power circuit is quite alike the +12 V one. Q901 in the −12 V circuit is the regulator transistor of the −12 V power and Q11 is the driver transistor. Q11 is driven by pin 11 of IC5. The +12 V output is used as the reference voltage of IC5. The current flow limiter circuit of the −12 V resembles that of the +12 V power circuit. The limiter functions when the potential difference across the resistor due to the current flow in R60 reaches approx. 0.7 V.

HEATER POWER SUPPLY

The heater power supply for the picture tube is supplied from Q13 driven by Q12. Its reference voltage is obtained from D42.

Q14 is SCR thyristor functioning as the heater protection circuit to open the fuse F2 when an abnormal voltage occurs in the output due to a short circuit of Q13 and other unexpected troubles.

+24 V POWER SUPPLY

+24 V power is used as the −24 V reference voltage and obtained from IC1 as the stable output voltage.

This circuit is quite alike the one of the +12 V power supply. The reference voltage is produced from the incorporated zener voltage and appears from pin 10 as the regulator transistor output. The output is used as the drive current for Q7.

The current limiter circuit also resembles the one in the +12 V power supply circuit and functions when the potential difference across R25 becomes approx. 0.5 V.

The +24 V output voltage can be adjusted with RV2.

+90 V POWER SUPPLY

+90 V supply is used in the video out, the deflection system, and other systems. The circuit is constructed with the reference voltage circuit of D8, the error amplifier circuit of Q4 and Q5, the regulator circuit of Q2 and Q903, the kick circuit of Q3, the protection and indicator circuits of F1 and D6, the excess voltage protection circuit of Q6 and D10 through D13, and other circuits.

The reference voltage of D8 is applied to the non-inverting input (Q4 base) of the differential amplifier circuit in the +90 V regulator circuit. The voltage from the detection section consisting of R14, RV1, R15, and R68 is applied to the inverting input (Q5 base) and Q2 is driven by the output of this differential amplifier. The output from Q2 drives regulator transistor Q903. The regulator circuit operation turns off for an abrupt overload (such as short circuit), but F1 is not blown out. If the regulator circuit becomes not to function due to the short circuit of the regulator transistor or etc., the output voltage turns to be in a range of 100 V to 110 V, so the protection circuit consisting of Q6 and D10 through D13 operates and the fuse F1 is blown.

When the +90 V protection circuit functions or F1 blows due to an abnormal load or other causes, indicator D6 turn on.

EXCESSIVE INPUT PROTECTION CIRCUIT

When the potential difference between C7 and C8 becomes large due to wrong ac primary input voltage, the protection circuit formed with Q1 and D5 functions in a range from 145 V to 160 V and F901 (located outside the board) opens.

DEGAUSS

Degauss coil is for the degaussing the picture tube. It is connected to the ac secondary (for +90 V line) in series with the degauss switch (S2) and the positive thermistor (THP1). When the degauss switch is turned on, the degauss current flows until THP1 is heated.

3-10. EHT AND PICTURE TUBE PROTECTOR (P BOARD)

EHT REGULATOR

Q1 and Q2 functions as a monostable multivibrator triggered by the AFC pulse from pin 1 of connector P-7 differentiated in R17 and C13, turning on and off drive transistor Q3 and switching the converter-out transistor, and supplies the sine waveform signal to the primary of FBT through the series and parallel resonance circuit consisting of L2, C9, C10, and FBT. The high-voltage is obtained to produce a dc voltage of five times the peak value of the FBT output voltage in the high voltage block and the voltage is divided in the high-voltage bleeder resistance in the high voltage block. Thus the high voltage and the convergence voltage are supplied to the picture tube. The high-voltage bleeder resistance is connected to the −12 V power supply via RV1 and R18 on the P board and feeds out approx. 0V and 6 V as the bleeder output of the high voltage block. The 0 V output enters the buffer in IC1 (1/2) and the buffer output goes to the error amplifier. The amplifier output enters the emitter follower of Q4 to control the supply voltage to R10 and C2 connected to the Q1 and Q2 monostable multivibrator. Consequently the time constant is changed, the on-division of the converter-out transistor is changed for varying on the current, and the back pulse voltage is changed. So this circuit controls the high voltage.

PICTURE TUBE PROTECTOR

The picture tube protector functions as follows: The approx. +6 V from the high-voltage bleeder is filtered in R26 and C16 and goes to the buffer in IC2 (1/2). The buffer output is connected to the comparator in IC2 (2/2). When the high voltage increases due to some causes and exceeds the reference voltage determined by D13, R23, R24, and R41, the output voltage of IC2 (2/2) is inverted from approx. −10 V to approx. +10 V, turning on Q5. The voltage supplied to the Q1 and Q2 monostable multivibrator from Q4 turns to ground potential, the monostable multivibrator stops, and the high voltage is cut off, protecting the picture tube. Similarly when the high-voltage bleeder output decreases below the compared voltage determined by R32 and R33, the comparator in IC3 (2/2) inverts its output from approx. −10 V to approx. +10 V, and this voltage stops the high voltage output circuit operation.

The vertical-out pulse connected to pin 4 of connector P-7 is peak-rectified by D12 and its voltage is applied to the comparator in IC3 (1/2). When the vertical-out disappears for some reason, the IC3 (1/2) output is inverted to approx. +10 V from approx. −10 V and turns on Q5. So the high voltage is cut off.

3-11. INPUT TERMINAL AND Q BOARD

Input terminal is aparted from the chassis for a minimum return loss and a better hum rejection when it is terminated with 75 Ω.

Each input terminal of the VIDEO A, VIDEO B, EXT SYNC, R, G, and B is connected to the Q board with a shielded line. The shield lines are connected to the bases of the input transistors Q1, Q7, Q13, Q19, Q27, and Q35 and the signal lines to the emitters of these transistors respectively. Consequently the hum components in the base and the emitter of each transistor are in phase, being offset each other.

The signal connected to the VIDEO A terminal is fed, through Q1, Q4, Q5, and Q6 of the OP AMP Q1, to pin 5 of IC4, switching integrated circuit. (The gain of the OP AMP is approx. 1.)

The signal entered the VIDEO B terminal is fed to pin 3 of IC4 in the same manner as in the signal connected to the VIDEO A terminal. When INPUT switch S3 on the JA board is in the A position, pin 6 of IC4 is high (approx. 4 V) and the VIDEO A signal is outputted from pin 1 of IC4 to pin 5 of IC6.

When the INPUT switch S3 on the JA board is in the B position, pin 6 of IC4 is low (0 V) and the VIDEO B signal is fed to pin 5 of IC6. Pin 6 of IC6 becomes high with INPUT switch set to A or B position and low with INPUT switch set to RGB or TEST position.

An incorporated crosshatch signal is connected to pin 5 of IC5. When the CROSSHATCH switch S4 on the DA board is in the OFF position, pin 6 of IC5 is low and the VIDEO A, B or TEST signal is fed to the Q-14 connector (COMP VIDEO OUT) from pin 1 of IC5 but when the CROSSHATCH switch S4 is in the ON position, pin 6 of IC5 is high and the crosshatch signal is fed to the Q-14 connector.

The signal connected to the R terminal is fed to the Q-11 connector (R OUT) via Q19, Q22, Q23, Q24, and Q25 of the OP AMP Q-4. The pedestal section of the signal is clamped to 0 V by a clamper consisting of Q26, IC1-1/2, and IC1-2/2. A portion of the pedestal section is extracted in gate transistor Q26 and integrated in IC1-1/2 to become DC level. It is phase-shifted in IC1-2/2 and controls Q23 of the operation amplifier. A gate pulse is produced in IC8 clamp pulse generator and fed to each gate transistor (Q26, Q34 and Q42).

The signal connected to the G terminal is supplied to the Q-10 connector (G OUT) and pin 3 of IC6 in the same manner as in the R terminal.

Similarly the signal applied to the B terminal is fed to the Q-7 connector (B OUT).

The signal connected to the EXT SYNC terminal is fed to pin 3 of IC7 in the same manner as in the VIDEO A terminal.

When the INPUT switch S3 on the JA board is in the A or B position, the SYNC signal at the A or the B terminal is supplied from pin 1 of IC6 to pin 5 of IC7 and when the INPUT switch is in the RGB or TEST position, the SYNC signal at the G terminal is supplied to pin 5 of IC7. When the SYNC switch (S2) on the JA board is in the INT position, the SYNC signal at the A, the B, the TEST, or the G terminal is fed to the SYNC OUT of the Q-13 connector from pin 1 of IC7. When the SYNC switch is in the EXT position, the SYNC signal at the EXT SYNC terminal is fed.

Therefore when no SYNC component is contained in the G terminal, the EXT SYNC is necessary.

3-12. REMOTE AND VIDEO SWITCHER (T BOARD)

IC1 is a Quad 2-to-1 line data selector and its function table is shown below. Pin 15 of IC1 is connected to ground and A or B appears at output Y depending on the select mode. When the remote terminal, pin 1 of IC1, is +5 V, the A channel appears at output Y and when 0 V, the B channel appears at the output. That is, when pin 1 is set to +5 V, the output of the front control enters IC1 from the connector T-13 and goes to the Q board from the connector T-19, controlling the input signal and when pin 1 is set to 0 V, the voltage from the 10P connector (CNJ902) enters the connector T-20 and goes to IC1 from the connector T-19, controlling the signal, which is the remote control of the signals.

[FUNCTION TABLE]

INPUTS			OUTPUT
STROBE	SELECT	A B	Y
H	X	X X	L
L	L	L X	L
L	L	H X	H
L	H	X L	L
L	H	X H	H

H : high level
L : low level
X : high or low level

3-13. CROSSHATCH GENERATOR (U BOARD)

HORIZONTAL HATCH GENERATOR

The wave-shaped H. sync pulse is applied to pin 12 of IC1 (4/4) via the R25 and C13 filter circuit.

In the CROSSHATCH mode, C.H. switch S4/DA board is on, +5 V is applied to pin 13 of IC1 (4/4) and pin 1 of IC1 (1/4). The H. sync inverted in IC1 (4/4) and IC1 (1/4) goes through Q1, is differentiated in the C1, C2, R3, and RV1 circuit, and outputted from the collector of Q2.

The OSC circuit consisting of Q4 and Q5 having the C5 and L1 resonance circuit stops its oscillating only during the period of the H. pulse passed through Q2 and Q3. The OSC output enters the limter circuit formed by Q4 and Q6, is counted down to 1/2 in IC2, and applied to pin 1 of IC7 (1/2), monostable multivibrator.

Approx. 180 nS duty positive polarity pulse is produced by R46, RV2, C35, and IC7 (1/2) on the basis of the negative going of the pulse applied to pin 1 of IC7 and the produced pulse appears at pin 13 of IC7 (1/2).

VERTICAL HATCH GENERATOR

IC3 and IC2 (2/2) form a 5 bit binary counter. The H. pulse of the pin 3 output of IC1 (1/4) is used as the clock pulse. The 1/32 fH pulse from pin 12 of IC2 (2/2) and the 1/16 fH pulse from pin 11 of IC3 are gated in IC5 (1/4).

The gate output from pin 3 of IC5 (1/4) turns from high to low after 20 H from the counter reset. This output is differentiated in C11, R23, and R24, and applied to pin 13 of IC5 (4/4).

The 1/2 fH pulses from pins 1 and 12 of IC3 are inverted in IC6 (1/4) and applied to pin 9 of IC5 (3/4). This pulse turns to low from high after 1 H from the counter reset. IC5 (4/4) and IC5 (3/4) form a latch circuit. The pulse which turns to high from low 20 H after the counter reset and to low from high 21 H after reset appears at pin 11 of IC5 (4/4).

This pulse is differentiated in C10, R21, and R22, goes to IC3 via IC4 (1/4), is inverted in IC4 (2/4), and applied to IC2 (2/2), which makes IC3 and IC2 (2/2) reset again 20 H after their reset and the resetting is repeated.

The wave-shaped positive V. pulse with 4 H width is inverted in IC4 (4/4), goes through IC4 (1/4), and resets IC3. The pulse is further inverted in IC4 (2/4) and resets IC2 (2/2).

Consequently the 1 H width V. hatch pulse of positive polarity is obtained at pin 11 of IC5 (4/4) at 20 H cycle after the counter is reset by the V. pulse.

NOISE GATE

The wave-shaped horizontal blanking pulse is applied to pin 9 of IC1 (3/4) via R40 and amplifier Q7.

The wave-shaped H. sync pulse of the pin 3 output of IC1 (1/4) is applied to pin 10 of IC1 (3/4) for gating and the H. sync pulse of negative polarity is obtained at pin 8 of IC1 (3/4).

The pulse is rectified in the D7, C15, R28, and R29 circuit and applied to the base of Q9. The dc voltage divided by R30 and R32 is applied to the emitter of Q9. Q9 conducts when the H. sync pulse appears at pin 8 of IC1 (3/4) and turns off when the H. sync pulse does not exist at the pin 8. The collector output of Q9 is applied to pin 13 of IC6 (4/4) and becomes the low level when Q9 is in the off state. Consequently the H. V. hatch signal mixed in IC6 (2/4) is stopped in IC6 (4/4).

H. and V. BLANKING

The H. sync pulse obtained by waveform shaping of the output from pin 11 of IC1 (4/4) is applied to pin 9 of IC7 (2/2) monostable multivibrator and approx. 8 μS negative polarity pulse produced on the basis of the front edge change of the sync pulse by R43, RV3, L32 and IC7 (2/2) is obtained at pin 12 of IC7 (2/2). Each of the H. and V. hatch signals is blanked only during the pulse period by applying the pin 12 output of IC7 (2/2) to pin 10 of IC4 (3/4) and pin 5 of ICS (2/4).

The wave-shaped V pulse of the pin 11 output of IC4 (4/4) is applied to pin 3 of IC7 (1/2) for the blanking of the H. hatch signal only during the V. pulse period.

3-14. SYNC PROCESSOR (V BOARD)

SYNC AGC

The composite video signal selected with SIGNAL INPUT switch (S3) on the J board or the composite sync signal selected with EXT SYNC switch (S2) is fed to the chroma filter consisting of R1 and C1 and applied to Q1.

The Q1 emitter output and the dc bias output of the Q2 emitter enter the emitter of amplifier Q3. Q4 connected to the collector of Q3 acts as a variable impedance element by the base bias of Q4. The circuit, therefor, functions as the AGC circuit to control the amplification gain of Q3.

The collector output of Q3 is applied to Q11 via cascade amplifier Q7 and Q8.

Q12, Q13, and Q14 serve as the voltage comparator to compare the base dc voltages of the transistors with the dc level of the output signal from the Q11 emitter.

The base bias for each of Q12 through Q14 is provided by the voltage divider consisting of R20 through R23.

The sync tip of the Q11 output signal conducts Q12, C6 is charged, the charged voltage drives Q9 and Q8, and then the output from Q11 is reproduced to dc.

Q13 conducts at approx. 50% level between the sync tip of the Q11 output signal and the pedestal.

Q14 compares the sync width of the Q11 output signal with the blanking width and sets the voltage level of the pedestal section through the AGC loop.

The collector current of Q14 flows to the integrating circuit formed by C19 and R17, the emitter impedance of Q4 is determined by the voltage in C19, and the amplification gain of Q3 is controlled so that Q14 conducts at the pedestal level of the signal.

1 H SYNC SEPARATION

The Q16 collector output after the sync separation is differentiated in the C27, R36, and R37 circuit and only the front edge pulse of the sync pulse enters pin 1 of IC4 (1/2) via IC2 (6/6) and IC3 (1/4).

The Q16 output is inverted in IC2 (5/6), differentiated in C28, R38, and R39, and enters pin 3 of IC4 (1/2).

The pin 4 output of IC4 (1/2) is made to the negative polarity pulse determined by the negative trigger pulses from pins 1 and 3 of IC4 (1/2) in the circuit arranged with R40, C31, D12, and IC4 (1/2).

The output from pin 4 of IC4 (1/2) is applied to pin 2 of IC5, monostable multivibrator and the positive polarity pulse of approx. 50 μS produced on the basis of the negative-going of the sync pulse appears at pin 3 of IC5. The pulse is inverted in IC2 (1/6), applied to pin 2 of IC3 (1/4), and processed in the AND-gate with the output pulse from pin 12 of IC2 in order to the equivalent pulse and others contained in the sync signal of Q16. Thus the pin 4 output pulse of IC4 becomes the 1 H cycle pulse.

H DELAY

The output pulse of pin 4 of IC4 is applied to pin 2 of IC6, monostable multivibrator and the positive polarity pulse of approx. 40 μS produced on the basis of the negative-going of the H. sync pulse by R42, RV1, C37, C36, and IC6 appears at pin 3 of IC6.

This pulse is applied to pin 9 of IC4 (2/2) and the output pulse from pin 4 of IC4 (1/2) is applied to pin 10 of IC4 (2/2) via IC3 (2/4).

In the H DELAY mode, pin 5 of IC3 (2/4) is 0 V and the approx. 6 μS negative polarity pulse is produced on the basis of the negative-going of the input pulse to pin 9 by R45, RV2, C41, and IC4 (2/2) as the output from pin 2 of IC4 (2/2).

In the NORMAL mode, the pulse from pin 9 of IC4 (2/2) is canceled by the pulse from pin 10 and the negative polarity pulse of approx. 5 μS produced on the positive-going of the pin 10 pulse is obtained as the output from pin 12.

31 kHz GENERATOR

The wave-shaped horizontal blanking pulse is applied to pin 2 of IC7 and pin 10 of IC13 (3/4), the pulse of approx. 32 μS duty cycle produced on the basis of the negative-going of the applied pulse by R58, RV3, C50, C51, and IC7, and the produced pulse is outputted from pin 3 of IC7.

This pulse is differentiated in the circuit formed with C52, R59, and R60, applied to pin 9 of IC13 (3/4), processed in the AND-gate with the input pulse to pin 10, and the negative polarity pulse of 31 kHz cycle is obtained as the output from pin 8 of IC13.

VERTICAL SYNC GENERATOR

IC9, IC10, and IC11 are binary counters using the 31 kHz pulse from IC13 (4/4) as the clock pulse.

The sync signal of the Q16 output is integrated in the R46, C46, R71, R47, C47, and IC8 (2/2) circuit and sliced by D10 and D11 to separate only the vertical sync.

The sync goes through buffer amplifier IC8 (1/2), is differentiated by C49 and R53, and enters amplifier Q20.

The negative polarity vertical pusle of the Q20 collector output is inverted in IC2 (3/6), applied to pin 12 of IC12 (3/4) and differentiated by the C67, R55, and R56 circuit, and also applied to pin 14 of IC12 (4/4).

Since pin 10 of IC14 (5/6) remains in low, pin 13 of IC12 (3/4) in high, pin 6 of IC14 in low, and pin 11 of IC12 (3/4) in high at least within 1 field after the vertical pulse is applied, the following input vertical pulse is inverted, appears at pin 9 of IC12 (3/4), is differentiated by C68, R64, and R65, and applied to pin 13 of IC15 (4/4).

When the second vertical pulse turns to low from high before it is inputted, the output from pin 12 of IC14 (6/6) is differentiated by C66, R62, and R63, and the pin 11 output of IC15 (4/4) becomes high. This output serves as the reset pulse for counters IC9, IC10, and IC11.

At this time the pin 11 output of IC15 (4/4) goes to inverter IC14 (1/6) to be the reset pulse for IC15 (1/4) and IC12 (1/4) and each output is fixed to low.

Similarly the vertical pulse to pin 13 of IC15 (4/4) acts as the counter reset pulse.

IN NORMAL MODE

+5 V is applied to pin 1 of IC13 (1/4). The 1/2 fH pulse is applied to pin 2 of IC13 from pin 9 of IC9 and the pin 2 turns to high from low within 1 H after the vertical pulse is inputted. Pin 3 of IC13 (1/4) turns to low from high. The change goes through IC12 (1/4) and IC14 (4/6), is differentiated in C64, R68, and R69, and enters pin 6 of IC12 (2/4). Pin 7 is fixed to high. The 1/8 fH pulse, pin 11 output of counter IC9, is applied to pin 5 of IC12 (2/4) and the pin 7 output of IC12 (2/4) turns to high at 1 H after the vertical pulse is inputted. The level turns to low after 8 H and is fixed. This state is kept until the following vertical pulse is inputted.

IN DELAY MODE (FOR PAL MODEL)

Pin 1 of IC13 (1/4) becomes 0 V with the DELAY switch. The 1/16 fH, 1/32 fH and 1/256 fH pulses of IC16 gate outputs are applied to pin 2 of IC12 (1/4). The pulse turns to low from high at 152 H after the vertical pulse. The pin 4 output of IC12 (1/4) turns to high from low at 152 H. The output from IC14 (4/6) turns to low from high. The positive polarity of 1 H width appears as the pin 7 output of IC12 (2/4) from 152 H by the same principle with the NORMAL mode.

IN DELAY MODE (FOR PAL-M MODEL)

Pin 1 of IC13 (1/4) becomes 0 V with the DELAY switch. The 1/256 fH pulse of the pin 1 and 12 outputs of counter IC11 is inverted in IC13 (2/4). The inverted pulse is appeared to pin 2 of 12 (1/4). The pulse turns to low from high at 128 H after the vertical pulse. The pin 4 output of IC12 (1/4) turns to high from low at 128 H. The output from IC14 (4/6) turns to low from high. The positive polarity of 1 H width appears as the pin 7 output of IC12 (2/4) from 128 H by the same principle with the NORMAL mode.

VERTICAL SYNC NOISE GATE

The 1/512 fH pulse, output from pin 9 of counter IC11 is inverted in IC14 (5/6) and applied to pin 15 of IC12 (4/4).

The pin 13 output of IC12 (4/4) remains in low until 256 H pulse input from the vertical pulse input and turns to high from 256 H pulse input. The change is inverted in IC14 (3/6) and applied to pin 10 of IC12 (3/4). The output of pin 11 of that IC is low until 256 H pulse input and turns to high after 256 H until the following vertical pulse is inputted and the counter is reset.

Consequently even if a noise is mixed into the vertical pulse until 256 H from the vertical pulse input, the noise is canceled in IC12 (3/4) and the noise component does not appear.

VERTICAL FREE RUN GENERATOR (FOR PAL MODEL)

The 1/128 fH pulses of the pin 11 output of IC10 and the 1/512 fH pulse output from pin 9 of IC11 are processed in AND-gate IC15 (3/4) and the pulse which turns from high to low at 320 H from the vertical pulse input is obtained at pin 8 of IC15 (3/4). Note that this is the case that the succeeding vertical pulse is not inputted and the counter is not reset. The pin 6 output of IC15 (2/4) turns to high from low at 320 H, is inverted in IC14 (6/6), differentiated by C66, R62, and R63, and the pulse which turns to high from low at 320 H appears at pin 11 of IC15 (4/4). The counter reset is repeated by this pulse until the vertical pulse is inputted and the 8 H width pulse of 320 H cycle is obtained at pin 7 of IC12 (2/4).

VERTICAL FREE RUN GENERATOR (FOR PAL-M MODEL)

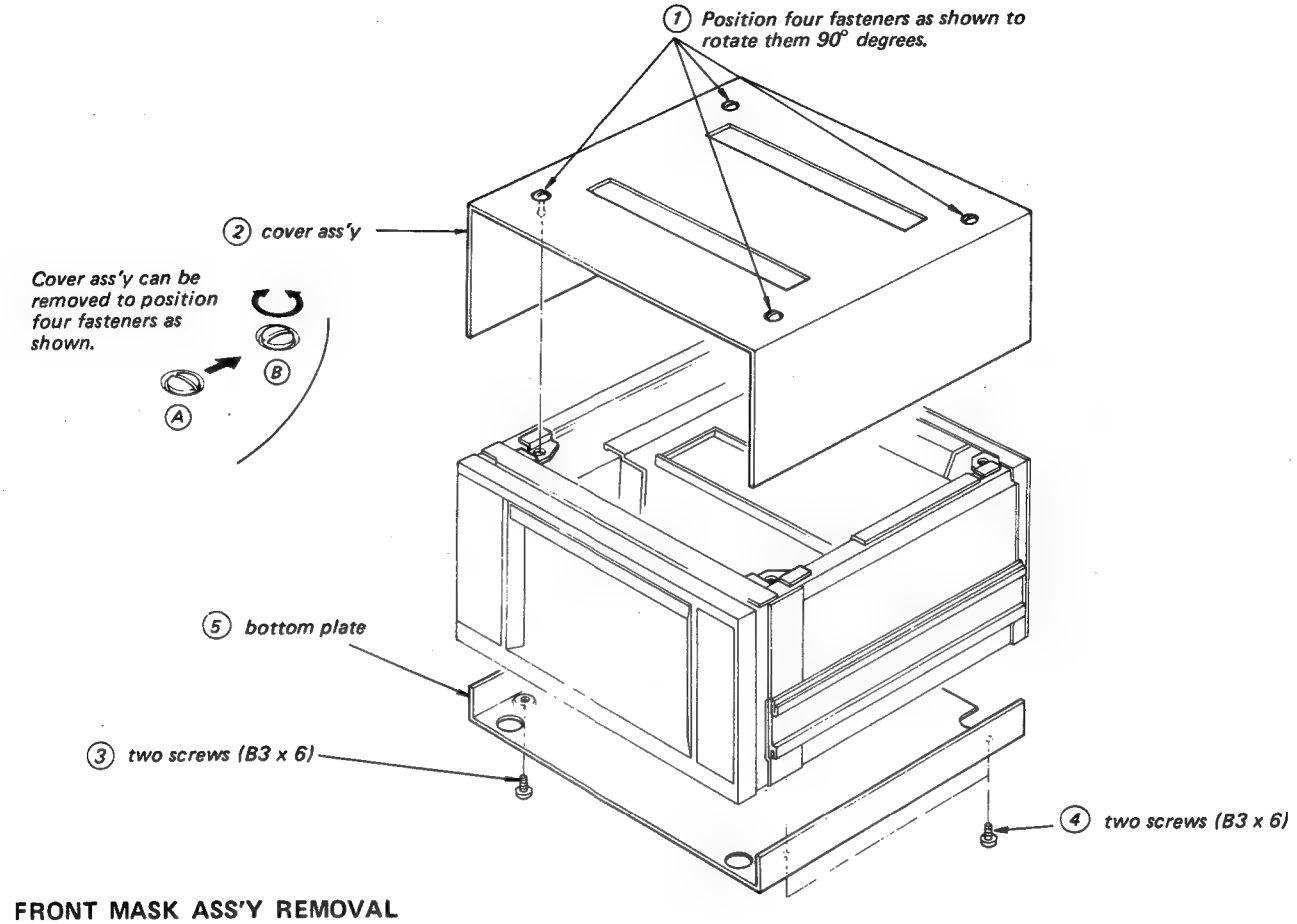
The 1/16 fH pulses of the pin 1 and 12 outputs of IC10 and the 1/512 fH pulse output from pin 9 of IC11 are processed in AND-gate IC15 (3/4) and the pulse which turns from high to low at 264 H from the vertical pulse input is obtained at pin 8 of IC15 (3/4). Note that this is the case that the succeeding vertical pulse is not inputted and the counter is not reset. The pin 6 output of IC15 (2/4) turns to high from low at 264 H, is inverted in IC14 (6/6), differentiated by C66, R62, and R63, and the pulse which turns to high from low at 264 H appears at pin 11 of IC15 (4/4). The counter reset is repeated by this pulse until the vertical pulse is inputted and the 8 H width pulse of 264 H cycle is obtained at pin 7 of IC12 (2/4).

3-15. TALLY CIRCUIT (XA and XB BOARDS)

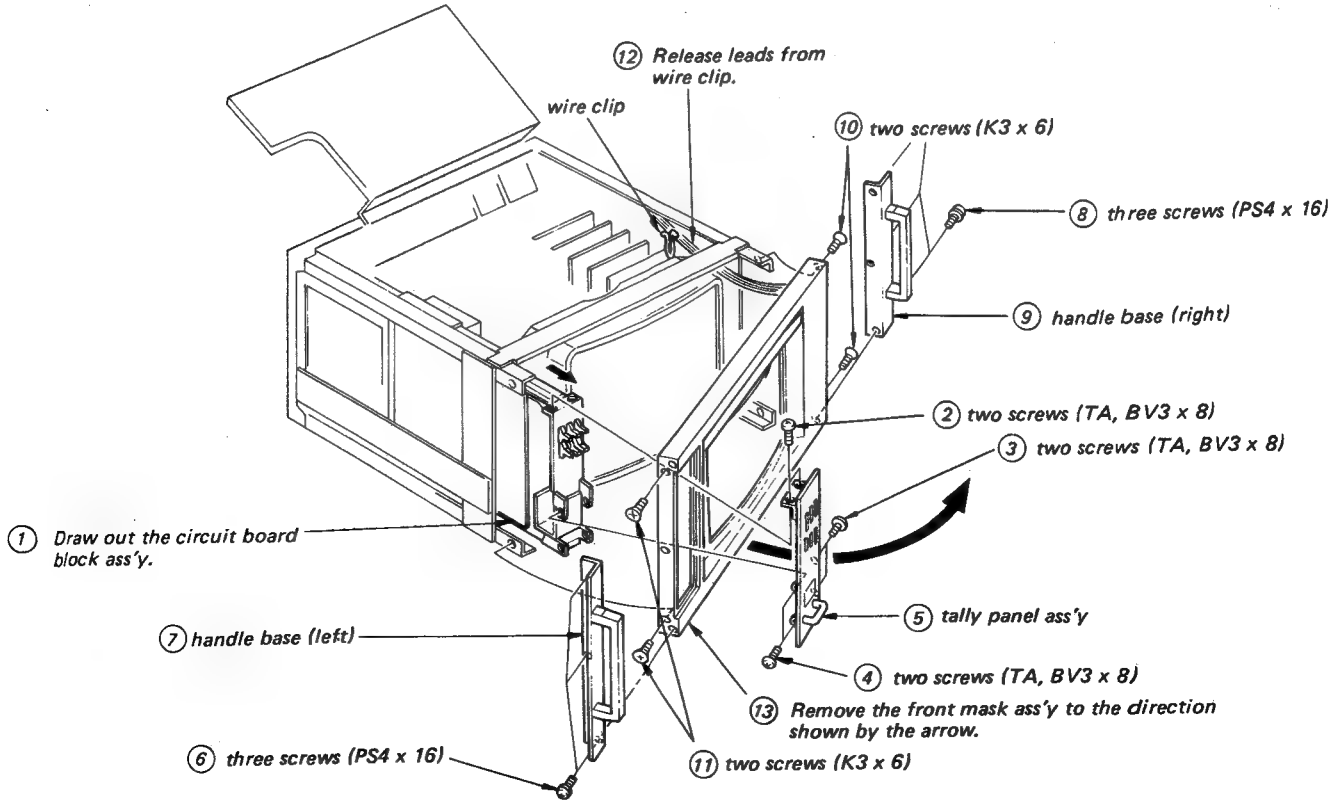
S2 on the XB board is a BCD switch, IC1 is a BCD-to-7 segment decoder, and S2 and IC1 are connected. The binary signal selected with S2 is converted to energize a 7 segment LED (LED1) on the XA board. The energized LED has the identical number to the one selected with S2. When the S1 is OFF position, ON and OFF of LED is controled by the external switch.

SECTION 4
DISASSEMBLY

4-1. CABINET REMOVAL

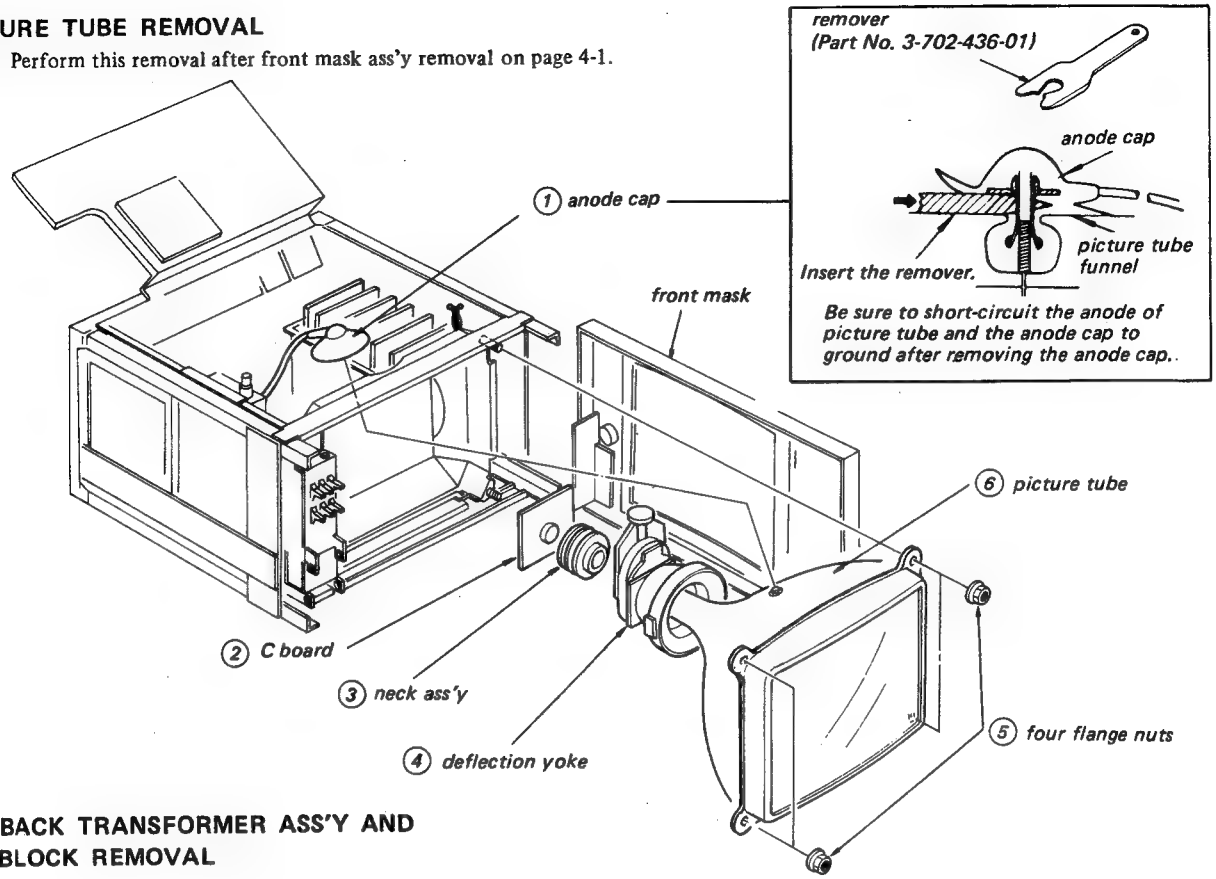


4-2. FRONT MASK ASS'Y REMOVAL

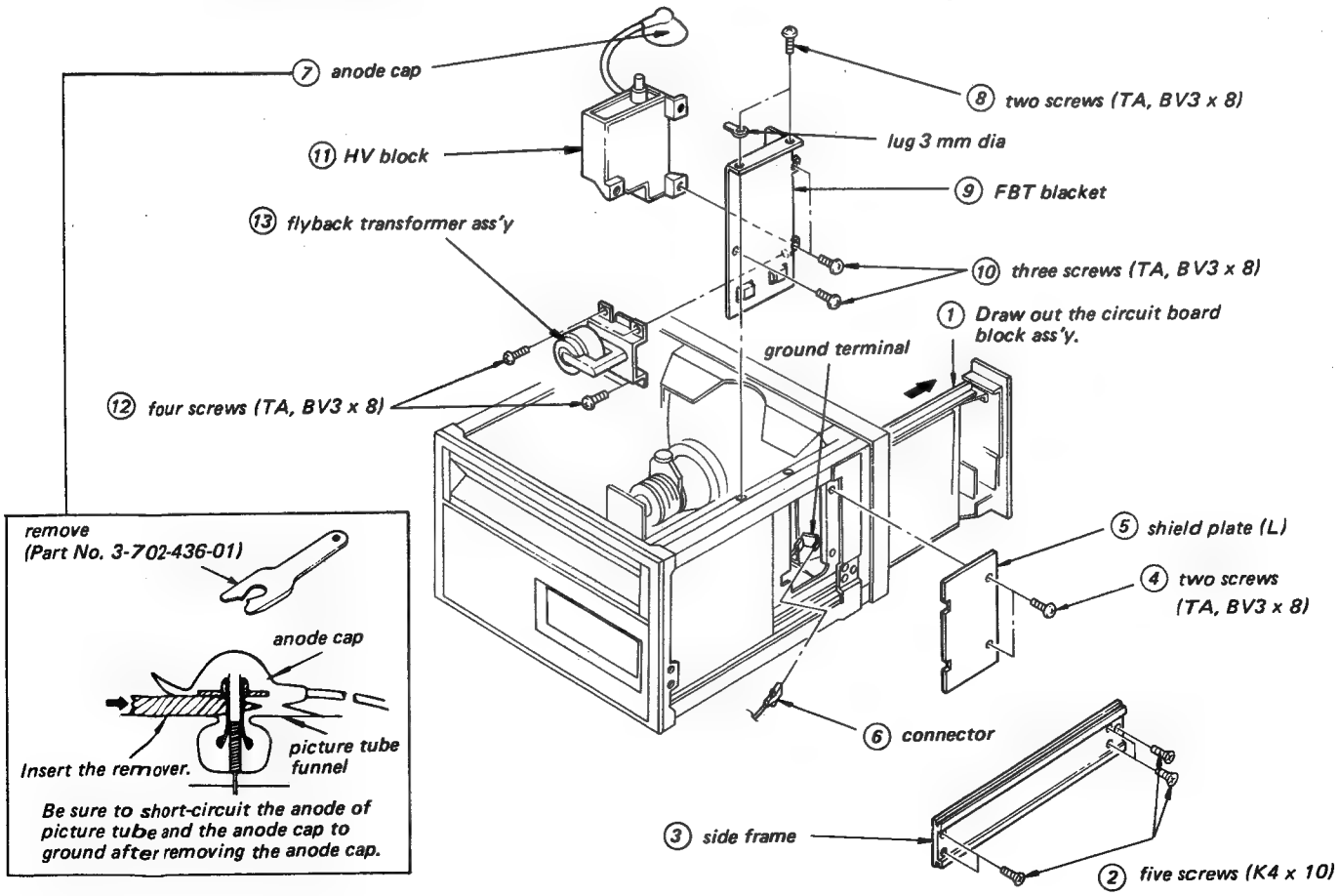


4-3. PICTURE TUBE REMOVAL

Note: Perform this removal after front mask ass'y removal on page 4-1.

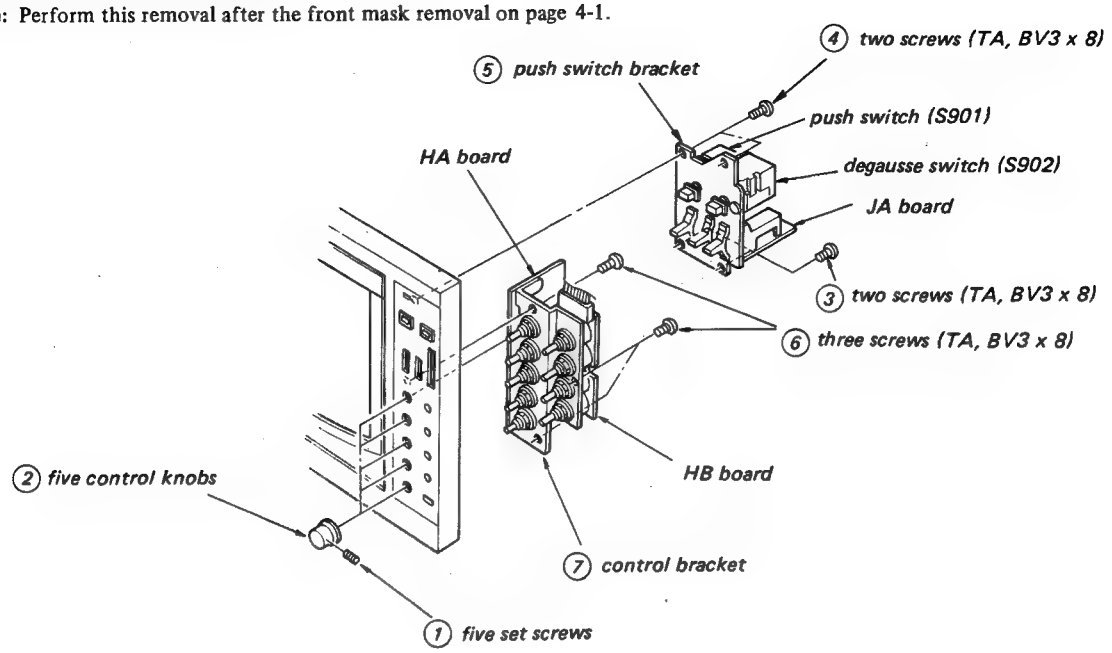


4-4. FLYBACK TRANSFORMER ASS'Y AND HV BLOCK REMOVAL

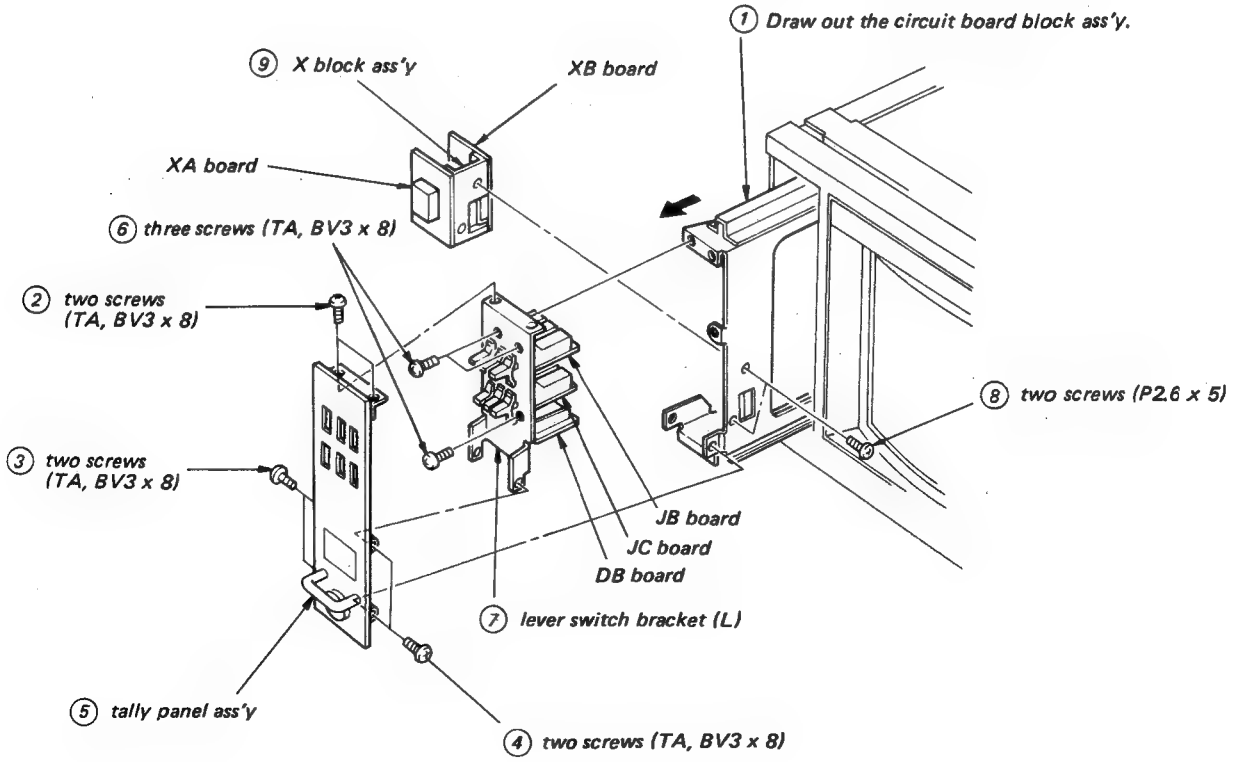


4-5. CONTROL BLOCK (RIGHT) REMOVAL

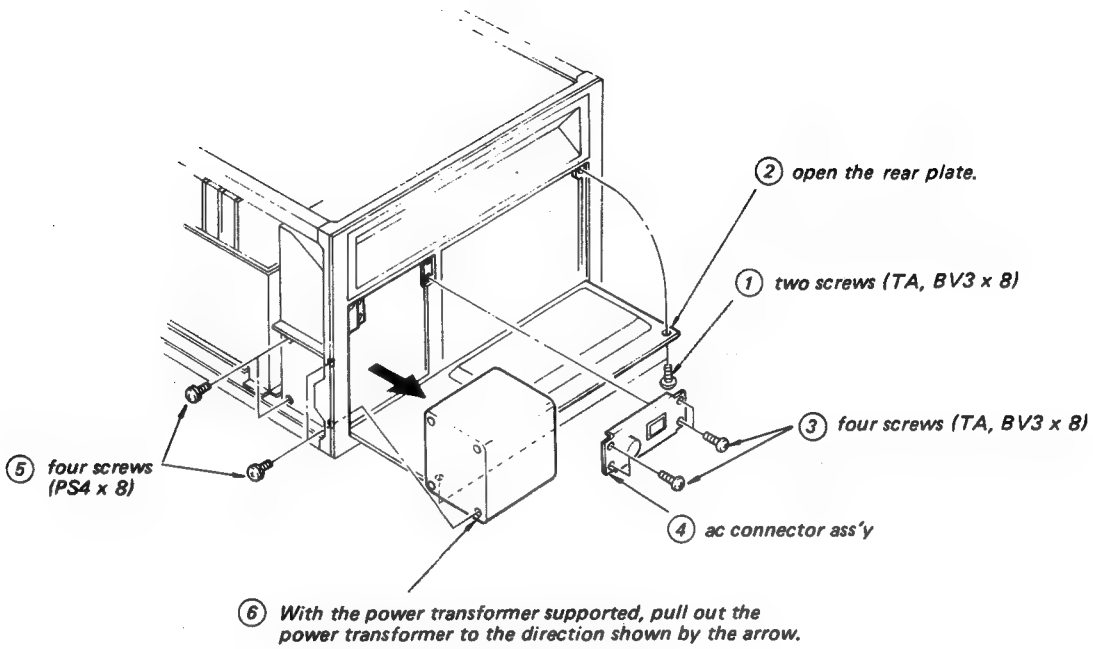
Note: Perform this removal after the front mask removal on page 4-1.



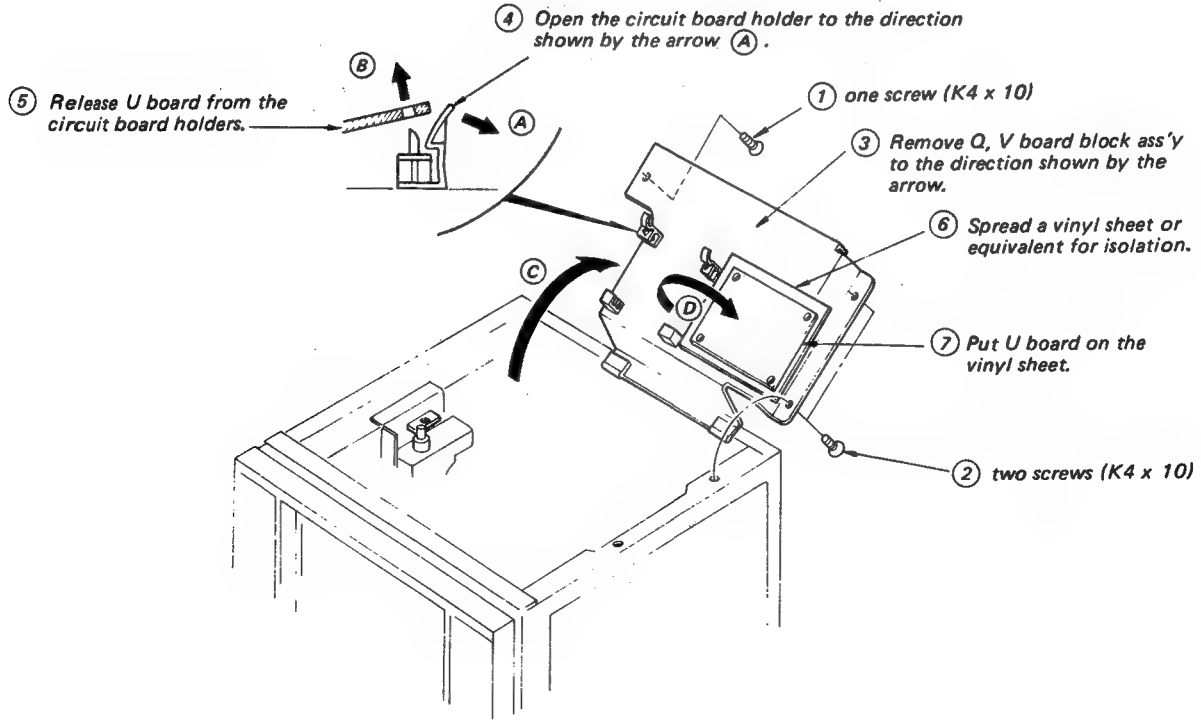
4-6. CONTROL BLOCK (LEFT) REMOVAL



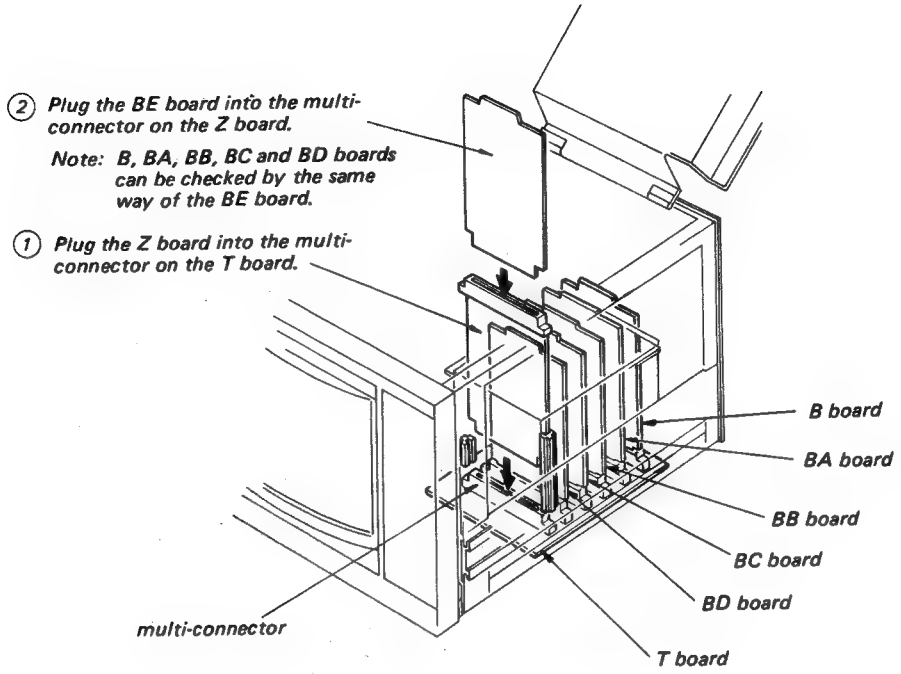
4-7. POWER TRANSFORMER REMOVAL



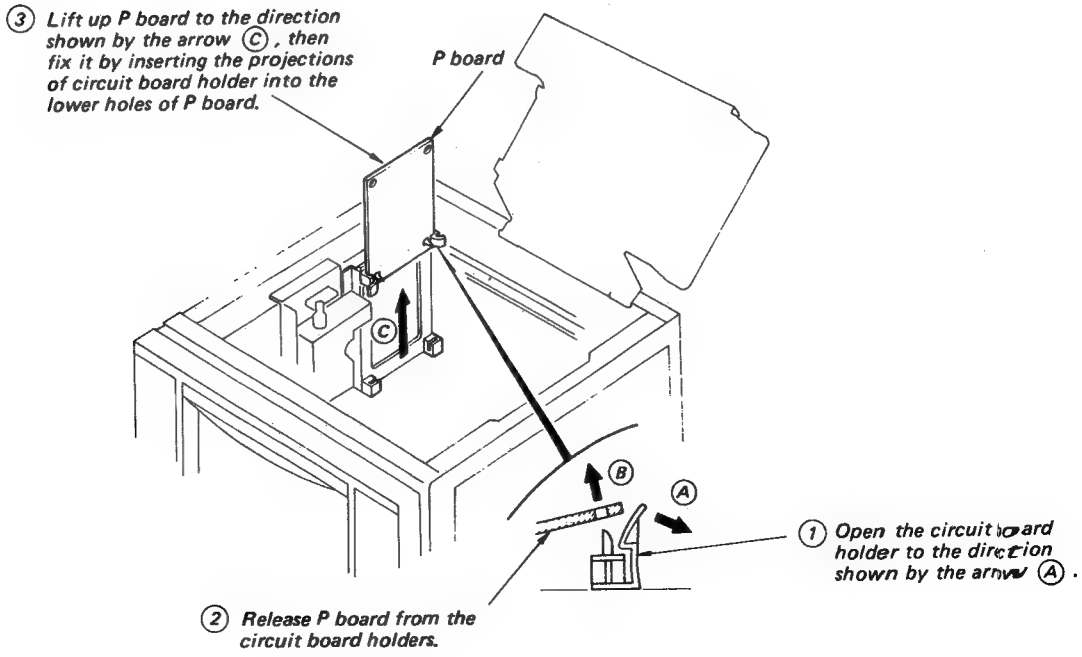
4-8. U BOARD REMOVAL (CHECKING IT UP)



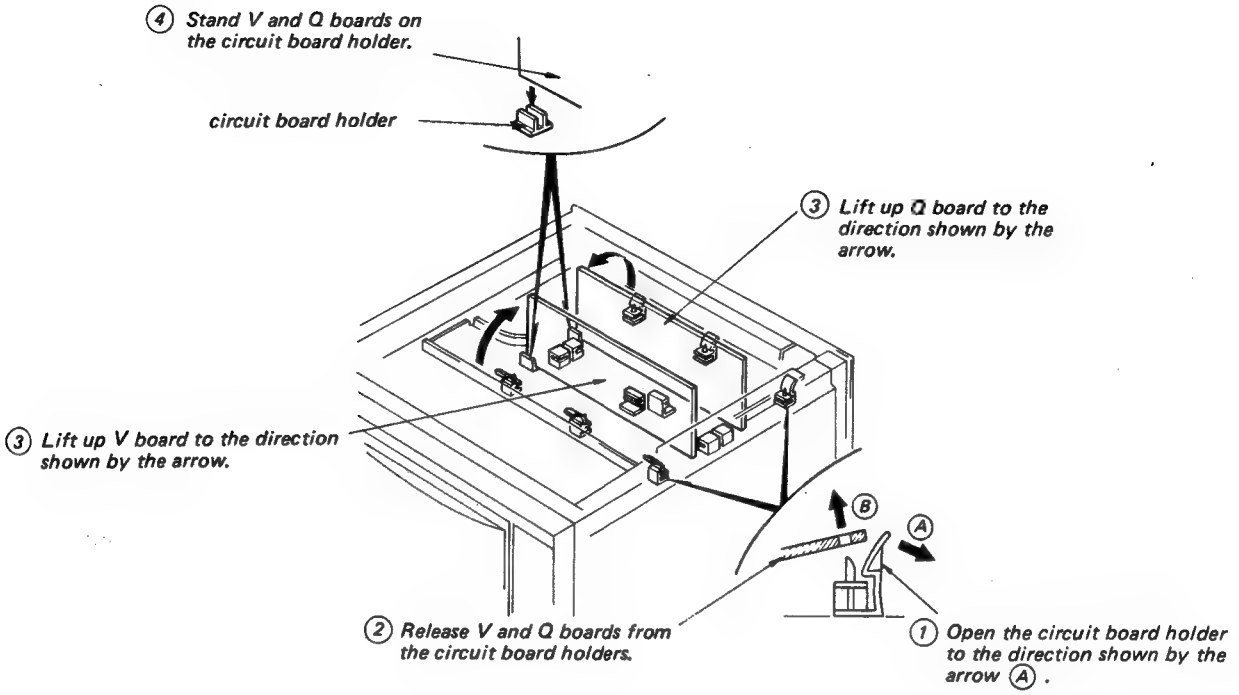
4-9. CHECK OF B, BA, BB, BC, BD AND BE BOARDS



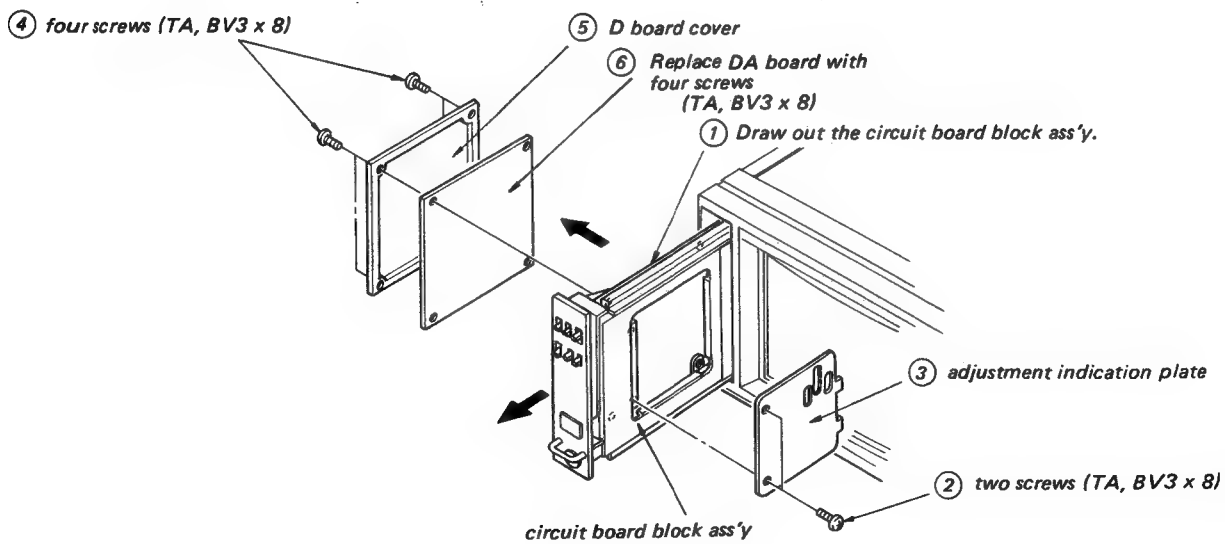
4-10. P BOARD REMOVAL (FOR CHECKING IT UP)



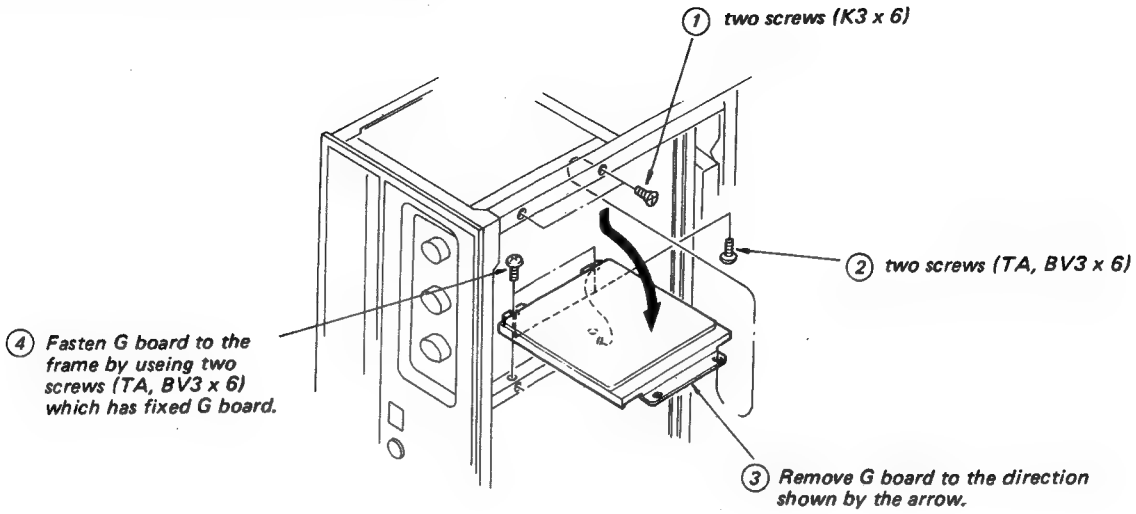
4-11. V AND Q BOARDS REMOVAL (FOR CHECKING THEM UP)



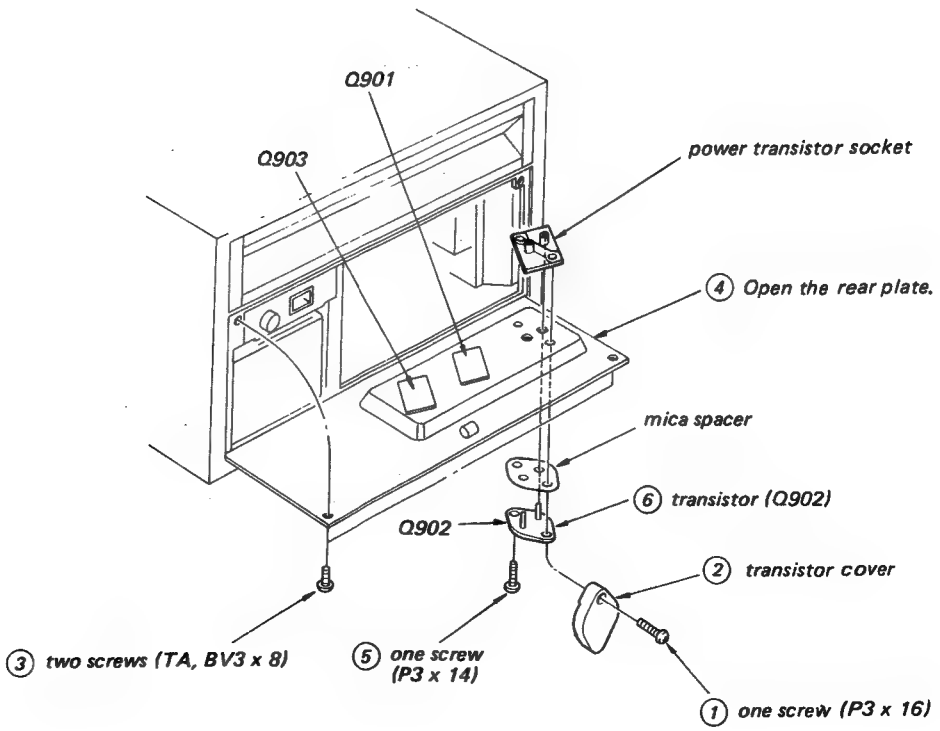
4-12. DA BOARD REMOVAL (FOR CHECKING IT UP)



4-13. G BOARD REMOVAL (FOR CHECKING IT UP)

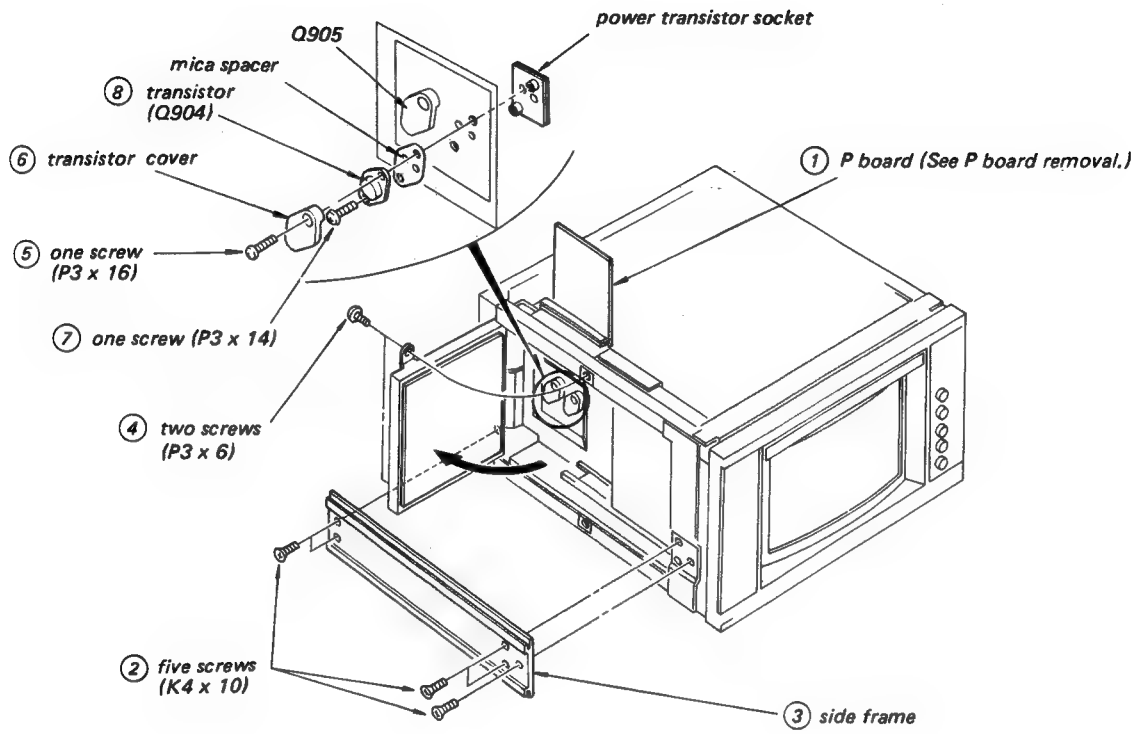


4-14. TRANSISTOR REMOVAL (Q901, 902 and 903)



4-15. TRANSISTOR REMOVAL (Q904, 905)

Note: Perform this removal after P board removal on page 4-5.



SECTION 5
ADJUSTMENTS

5-1. SETUP ADJUSTMENT

The adjustment procedure after the replacement of a picture tube is described below. Usually adjust subcontrols on the subcontrol panel for the convergence and white balance adjustment.

[Jigs, Tools, and Measurement Equipment Required]

1. Signal Generator (TEKTRONIX 1411 series for PAL model or 1412 equivalent for PAL- M model)
2. Degausser
3. Color Analyzer
4. Luminance Meter

[Landing Adjustment]

1. Connect the signal generator to this monitor and feed in the white signal.
2. Turn the BRIGHTNESS and CONTRAST knobs fully clockwise.
3. Keep pushing the DEGAUSS switch more than 5 seconds (until the picture rolling stops) for the degaussing.
4. Set the PURITY adjusting knob to its mechanical center. (See Fig. 5-1.)

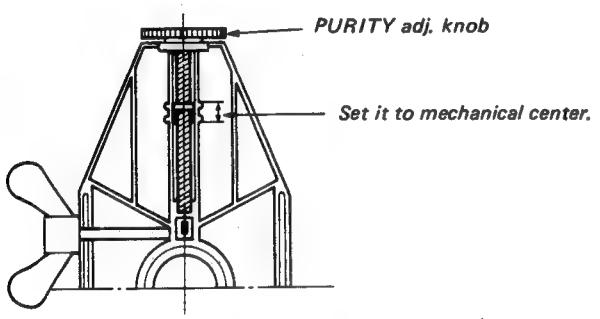


Fig. 5-1.

5. Slide the deflection yoke as fully until it contacts the picture tube funnel closely.
6. Fix the neck assembly at the position as shown in Fig. 5-2.

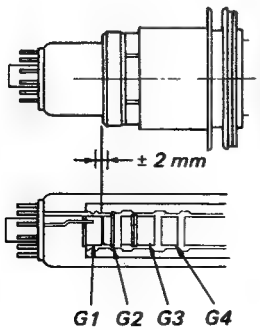


Fig. 5-2.

7. Make the screen green only (S1 and S3 on the DA board are OFF and S2 is ON.)

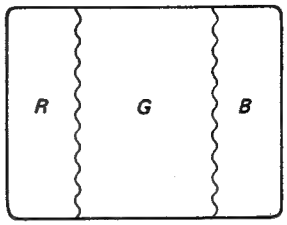


Fig. 5-3.

8. Turn the PURITY adjusting knob so as to center the green band on the screen as shown in Fig. 5-3.
9. Slide back the deflection yoke so that the green raster covers allover the screen.
10. Make the screen red only (S2 and S3 on the DA board are in the OFF position and S2 in the ON position) and repeat Steps 9. and 10. so that the red raster covers allover the screen.
11. Make the screen blue only (S1 and S2 on the DA board are in the OFF position and S3 in the ON position) and repeat the 9. and 10. steps so that the blue raster covers allover the screen.
12. Adjust the tilt of the deflection yoke and tighten the fixing screw.

● **When Color Nonuniformity exists at a screen corner:**

1. Apply the magnet around the deflection yoke where the color nonuniformity exists from the funnel side as shown in Fig. 5-4.

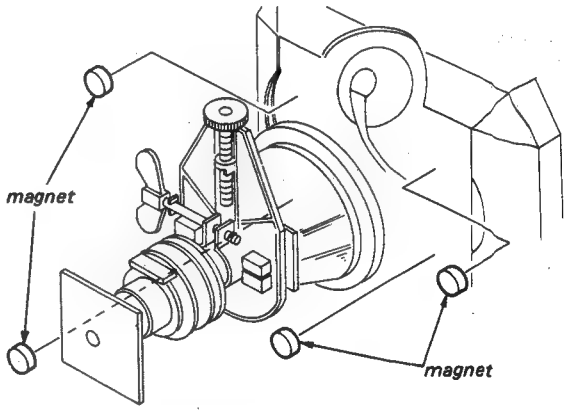


Fig. 5-4.

2. When the magnet is applied, degauss the face of the picture tube with the DEGAUSS switch.

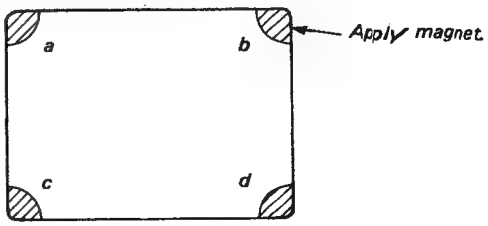


Fig. 5-5.

● **Final Confirmation**

After the adjustment, confirm finally that no color nonuniformity is observed when this monitor is placed facing in all the directions– north, south, east and west.

[Focus Adjustment]

1. Connect the signal generator to this monitor.
2. Feed in the dot and crosshatch signals.
3. Adjust FOCUS control (RV8) on the E board so that the center section of the picture is the best focus.

[Convergence Adjustment]

Preparation

1. Complete the signal generator connection and feed in the dot and rrosshatch signals.
2. Set the CONTRAST AND BRIGHTNESS knobs to the points where the dots and the crosshatch can be observed clearly.
3. Set the SUB. H. STATIC control (RV10) on the DA board to its mechanical center.

1. Static Convergence

- Horizontal Static Convergence

1) Adjust H. STAT control for the convergence of red and green in the horizontal direction at the screen center.
2) Perform the HMC correction when blue is out of convergence in the same direction on allover the screen.
3) Move the BMC magnet as shown in Fig. 5-6(a) to correct insufficient H. static convergence.

- Vertical Static Convergence

1) Adjust the V. STATIC control (RV11) on the DA board for the convergence of red and green in the vertical direction at screen center.
2) When blue is out of the convergence in the same direction allover the screen, perform the VMC correction.
3) Move the BMC magnet as shown in Fig. 5-6(b) to correct insufficient static convergence.

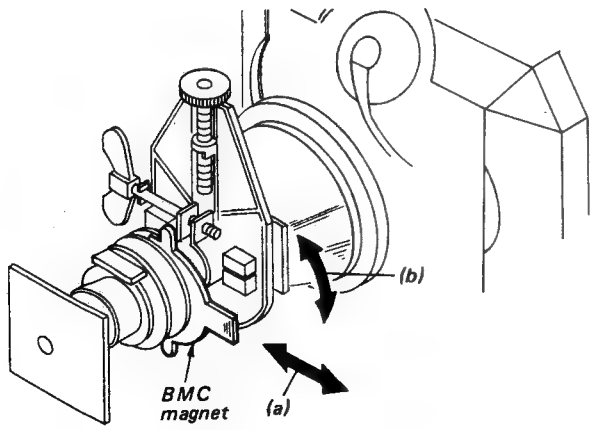


Fig. 5-6.

Note: 1) The HMC and VMC corrections should be repeated two or three times because these corrections are affected by each other.

2) Sometimes the focus becomes poor after the HMC or VMC correction so the focus adjustment should be done again after these corrections.

2. Dynamic Convergence

- Adjust the H. AMP (RV7), H. TILT (RV8), and Y. BOW (RV9) controls on the DA board as follows.

H AMP

Adjust RV7 so that L1 is equal to L2 or L2 to L3.

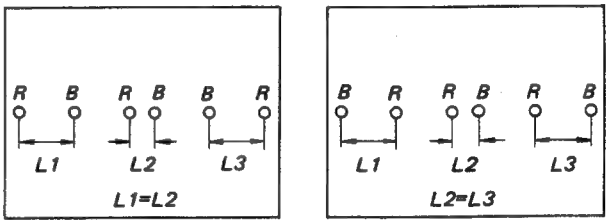


Fig. 5-7.

H TILT

Adjust RV8 for the convergence of red, green and blue.

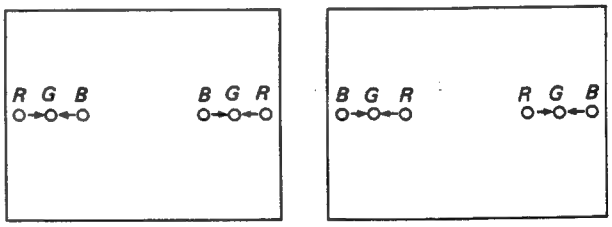


Fig. 5-8.

Y BOW

Adjust RV9 for the convergence of red, green and blue.

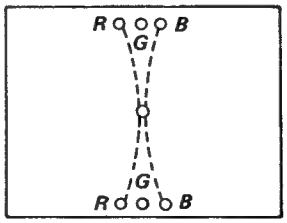


Fig. 5-9.

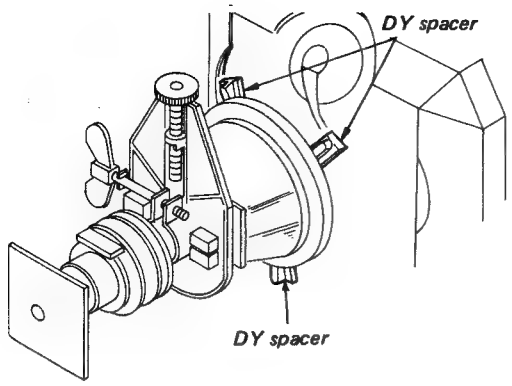


Fig. 5-12.

1) The adjustment should be done by moving the deflection yoke and the yoke should be fixed with the DY spacers after the adjustment. (See Fig. 5-12.)

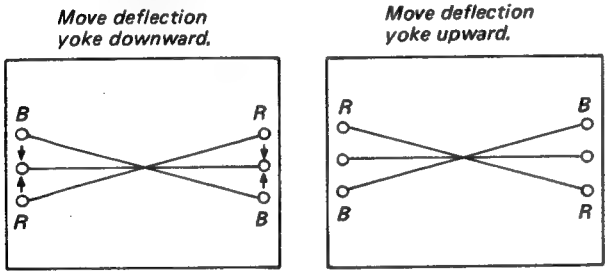
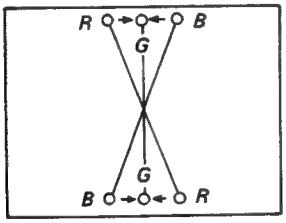


Fig. 5-13.

2) Adjust the Y. TILT control (RV4) on the DB board (Fig.5-24) as shown below.

Y TILT

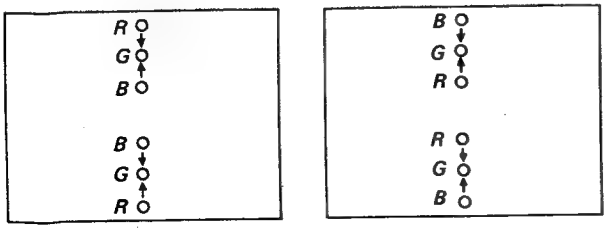


Adjust RV4 so that red, green, and blue converge.

Fig. 5-14.

3) Adjust the V. TILT-GAIN (RV3), the V. TILT-TOP (RV2), and the V. TILT-BOTTOM (RV1) controls on the DB board (Fig.5-24) for the V. tilt gain as shown below.

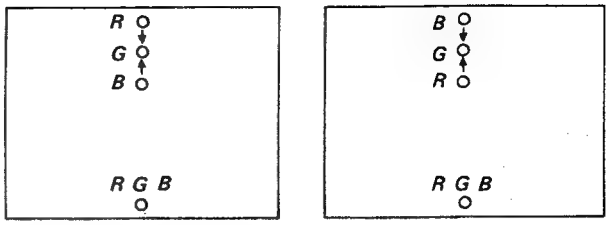
V TILT-GAIN



Adjust RV3 so that red, green, and blue converge.

Fig. 5-15.

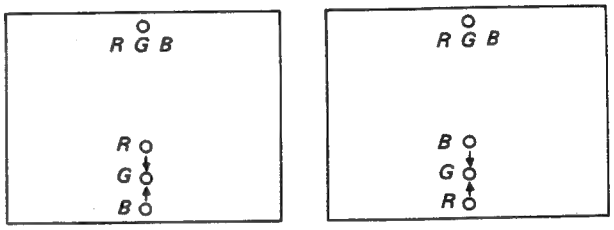
V TILT-TOP



Adjust RV2 so that red, green, and blue on the upper section of the screen converge.

Fig. 5-16.

V TILT-BOTTOM



Adjust RV1 so that red, green, and blue on the lower section of the screen converge.

Fig. 5-17.

- When misconvergence is observed at a corner;

Insert and paste the permalloy assembly between the deflection yoke and funnel corresponding to the corner where the misconvergence is observed as shown in Fig. 5-18.

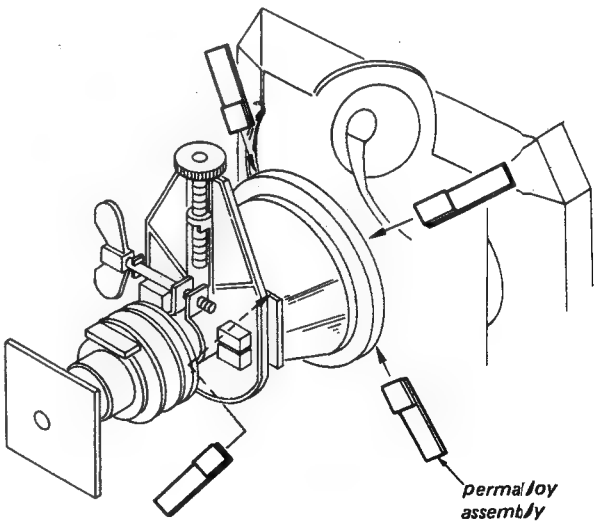


Fig. 5-18.

Note: After the landing adjustment and the convergence adjustment, fix the purity magnet and the BMC magnet with white paint or something like that.

[White Balance Adjustment]

1. Extract the BE board with using the Z board.
2. Set the R.G.B. BIAS and GAIN controls (RV1 through RV6 on DA board) to each mechnical center.
3. Set the CONTRAST and BRIGHTNESS knobs to each detent (fully counterclockwise) position.
4. Set the SET UP switch (S5) on the DA board to the ON position. (A dark picture with 1/3 of the normal vertical size is observed.)
5. Connect an oscilloscope to TP1 on the BE board and adjust RV1 for 60V dc. (See Fig. 5-19.)
6. Remove the scope and connect it to TP2 and adjust RV3 for 60V dc. (See Fig. 5-19.)
7. Remove the scope and connect it to TP3 and adjust RV5 for 60 Vdc. (See Fig. 5-19.)
8. Adjust the SCREEN control (RV9) on the E board so that the emitting color in the above condition brights faintly.
9. Push the DEGAUSS switch for degaussing.
10. Attach the color analyzer and the luminance meter on the picture tube face.
11. Adjust the R.G.B. BKG controls (RV1, RV3, and RV5) on the BE board so that the 1 NIT luminance and the 6500°K + 8 MPCD color temperature are obtained at the SETUP mode.
12. Set off the SETUP switch.
13. Connect the signal generator to this monitor and feed in a white pattern (100% white). (See Fig. 5-20.)
14. Adjust the R.G.B. DRIVE controls (RV2, RV4, and RV6) on the BE board so that the 69 NIT luminance and the 6500°K + 8 MPCD color temperature are obtained at the HIGH LIGHT mode.
15. Set the SETUP switch (S5) on the DA board to the ON position.
16. Confirm that the white balance is good at the SETUP mode.
17. Measure the voltage at each of TP1, TP2, and TP3 on the BE board with the oscilloscope and confirm that voltage at one of the test points is 60V to 65V and the ones at other two points are below the voltage. (See Fig. 5-21.)

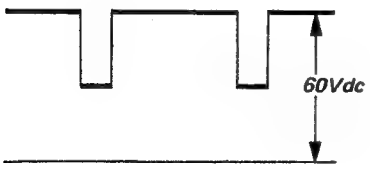
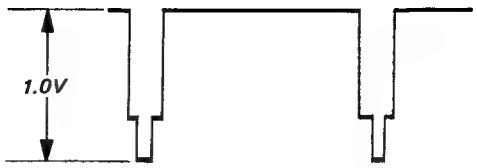


Fig. 5-19.



100% white signal
(VIDEO IN connector should be terminated with a 75Ω.)

Fig. 5-20.

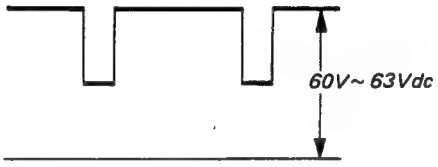


Fig. 5-21.

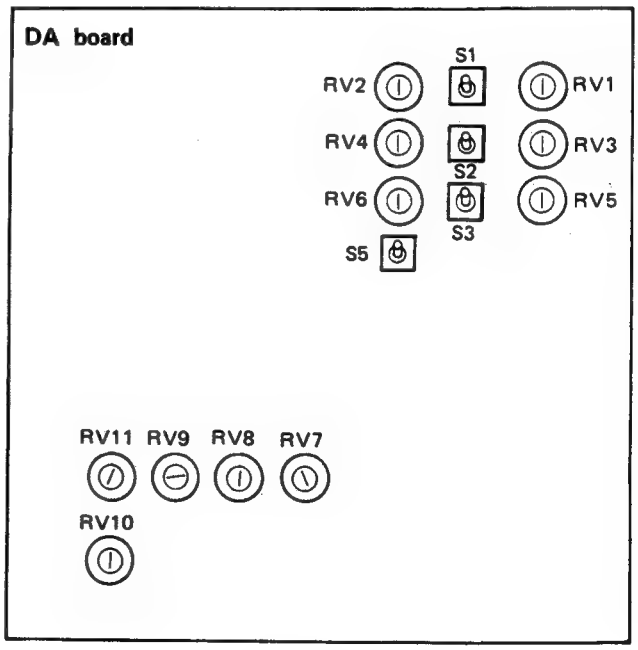


Fig. 5-22.

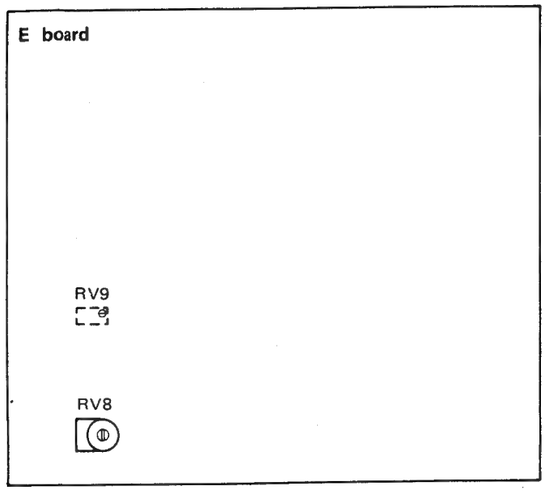


Fig. 5-23.

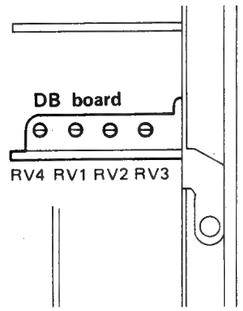


Fig. 5-24.

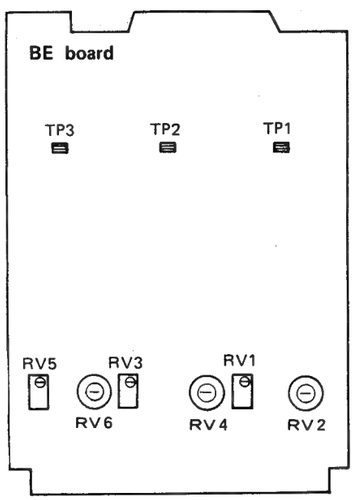


Fig. 5-25.

5-2. G BOARD ADJUSTMENT

Note: TEST EQUIPMENT REQUIRED

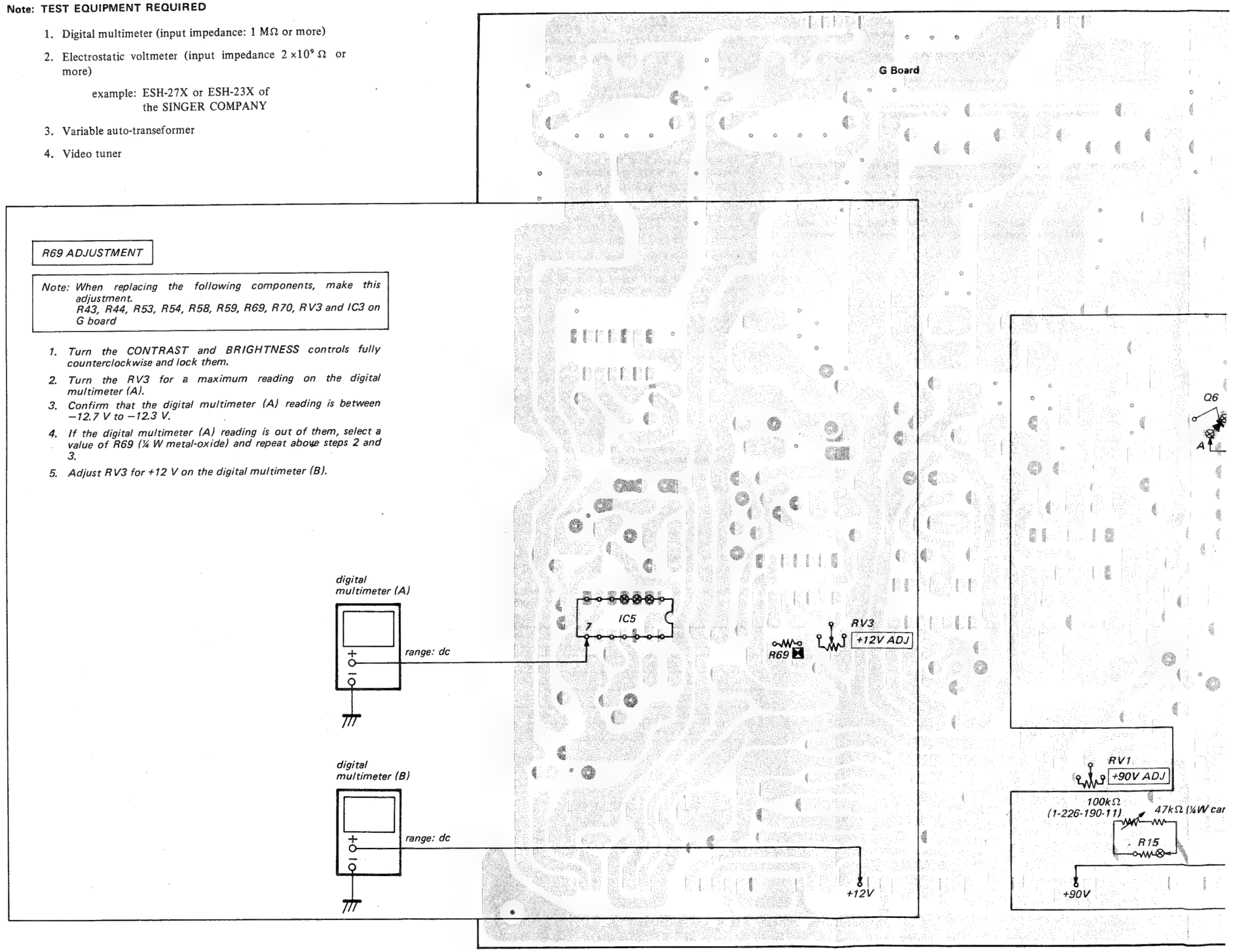
1. Digital multimeter (input impedance: 1 MΩ or more)
2. Electrostatic voltmeter (input impedance 2×10^9 Ω or more)

   example: ESH-27X or ESH-23X of the SINGER COMPANY
3. Variable auto-transeformer
4. Video tuner

R69 ADJUSTMENT

Note: When replacing the following components, make this adjustment.
R43, R44, R53, R54, R58, R59, R69, R70, RV3 and IC3 on G board

1. *Turn the CONTRAST and BRIGHTNESS controls fully counterclockwise and lock them.*
2. *Turn the RV3 for a maximum reading on the digital multimeter (A).*
3. *Confirm that the digital multimeter (A) reading is between −12.7 V to −12.3 V.*
4. *If the digital multimeter (A) reading is out of them, select a value of R69 (¼ W metal-oxide) and repeat above steps 2 and 3.*
5. *Adjust RV3 for +12 V on the digital multimeter (B).*



more)

$\langle 10^9\ \Omega$ or

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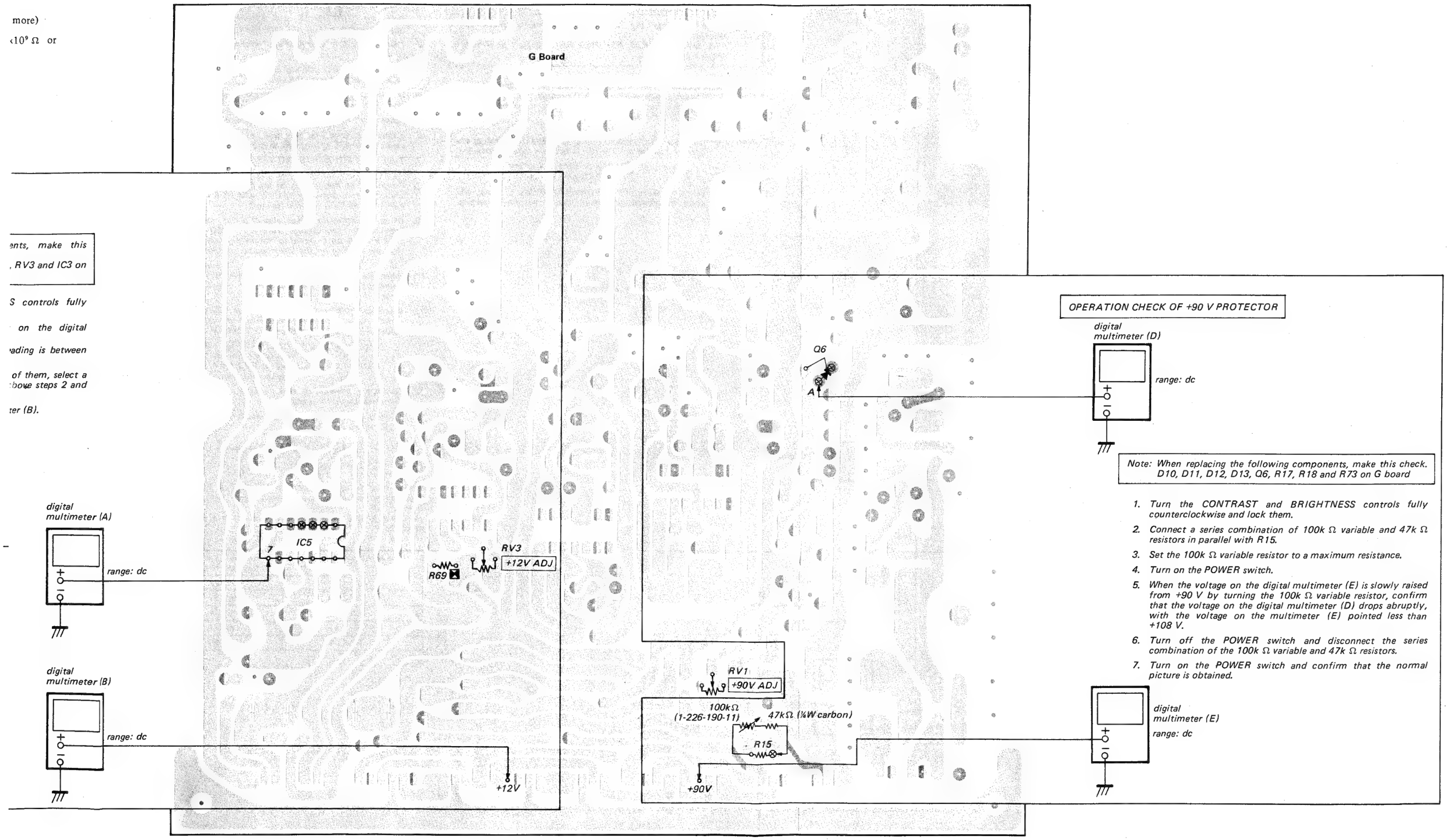
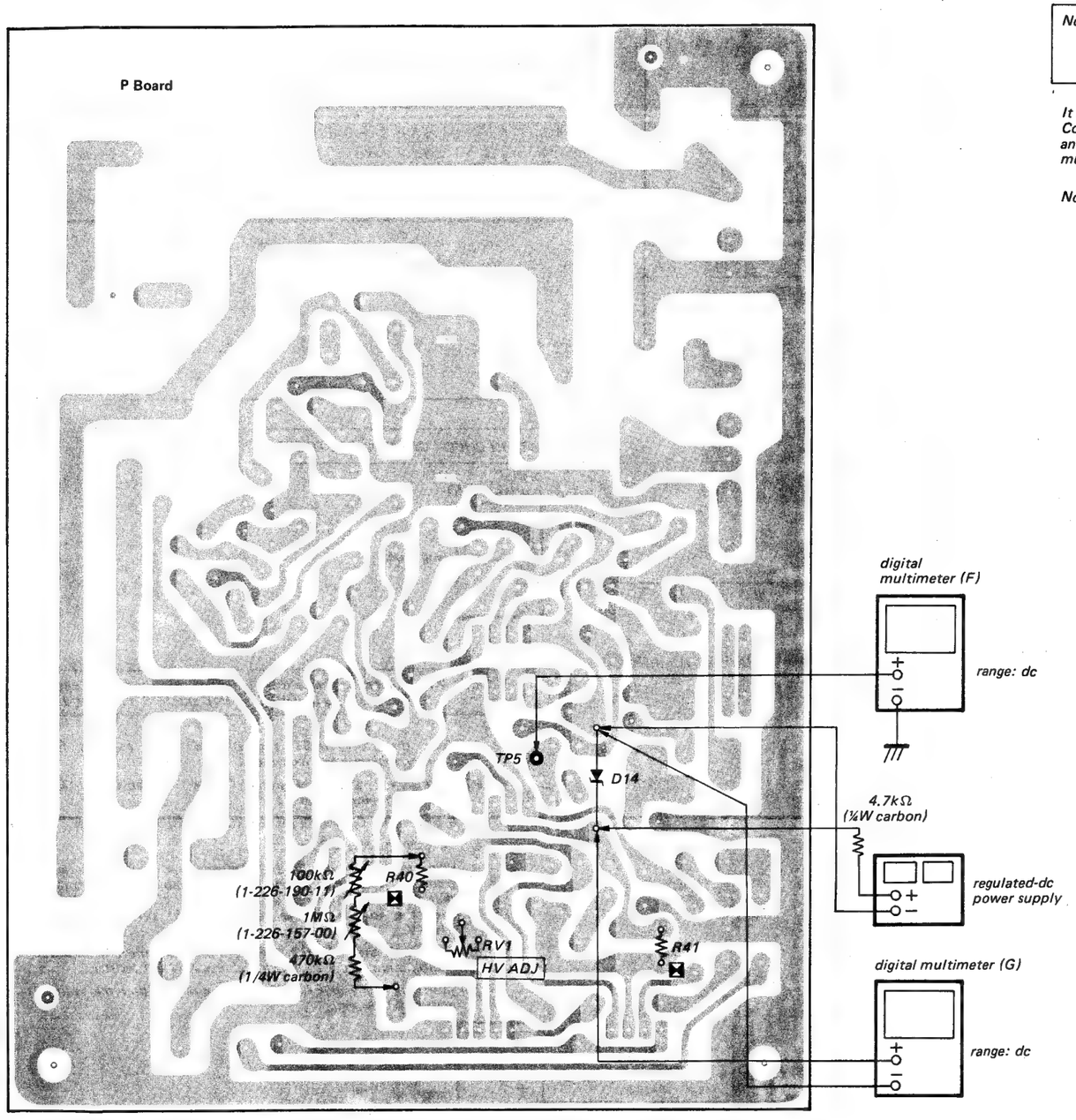


5-3. P BOARD ADJUSTMENT



R40 AND R41 ADJUSTMENTS

Note: When replacing the following components, make this adjustment.
D13, D14, R18, R23, R24, R40, R41 and RV1 on P board and HV block

It is necessary to use an electrostatic voltmeter for this adjustment. Connect the electrostatic voltmeter to the anode cap. Even though an electrostatic voltmeter may not be used, connect a digital multimeter to TP5 on P board.

Note:
- *Use an electrostatic voltmeter which is calibrated to the best, and which has 2 x 10^9 Ω or more input impedance.*
  (example: ESH-27X or ESH-23X of the SINGER COMPANY)
- *Use a digital multimeter which has 4 digit or more, and count a high-voltage from the digital multimeter reading.*

Case of electrostatic voltmeter

1. *Turn the CONTRAST and BRIGHTNESS controls fully counterclockwise. (Do not turn them to the locked position.)*
2. *Turn RV1 for a maximum reading on the electrostatic voltmeter.*
3. *Confirm that the reading on the electrostatic voltmeter is between 20.4 kV and 20.8 kV.*
4. *If necessary, select the resistance value of R40 (¼ W metal-oxide) and repeat above steps 2 to 4.*
5. *Adjust RV1 for 20.0 kV on the electrostatic voltmeter.*
6. *Connect a series combination of 1 MΩ variable, 100 kΩ variable and 470 kΩ resitors as shown.*
7. *Turn the 1 MΩ and 100 kΩ variable resistors for a maximum resistance.*
8. *Confirm that the reading on the electrostatic voltmeter drops abruptly from between 23.0 kV and 23.8 kV by turning the 1 MΩ and 100 kΩ variable resistors.*
9. *When the voltage-drop in step 8 is not confirmed with the high-voltage rised enough, turn RV1 (+90 V ADJ) and RV3 (+12 V ADJ) on G board to rise the high-voltage. And confirm that the reading on the electrostatic voltmeter drops abruptly from between 23.0 kV and 23.8 kV.*
10. *When the voltage-drop in steps 8 or 9 is not confirmed, select a resistance value of R41 (¼ W metal-oxide) and repeat above steps 6 through 9.*
11. *Disconnect the series combination of 100 kΩ variable, 1 MΩ variable and 470 kΩ resistors. When the step 9 is performed, adjust RV1 (+90 V ADJ) and RV3 (+12 V ADJ) on G board.*
    RV1 (+90 V ADJ): Adjust RV1 for +90 V dc on the digital multimeter (E).
    RV3 (+12 V ADJ): Adjust RV3 for +12 V dc on the digital multimeter (B).
12. *Connect a regulated dc power supply and a 4.7 kΩ ¼ W carbon resistor across D14 as shown.*
13. *Confirm that the digital multimeter (G) reading is between 20.96 V and 22.30 V.*

Case of Digital Multimeter (F)

Connect the digital multimeter (F) to TP5 on P board, and count a high-voltage from the digital multimeter (F) reading as shown below.
Adjusting procedures are the same as the case of the electrostatic voltmeter.

electrostatic voltmeter reading	*digital multimeter reading (voltage on TP5)*
20.0 kV	*5.427 V*
20.4 kV	*5.536 V*
20.8 kV	*5.644 V*
23.0 kV	*6.241 V*
23.8 kV	*6.458 V*

5-4. CIR

JIG,T

1. PAL
model
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3. Differe
4. Returr
5. Video
6. Oscillc
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8. Video
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11. Isolati
12. Vector
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15. Linear 0305-(
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1. INPU
2. SYN
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4. PHA
5. CHR
6. BRIC
7. CON
8. APEI
9. UND
10. V DE
11. H DE
12. BLU
13. AFC
14. PAL

R40 AND R41 ADJUSTMENTS

Note: When replacing the following components, make this adjustment.
D13, D14, R18, R23, R24, R40, R41 and RV1 on P board and HV block

It is necessary to use an electrostatic voltmeter for this adjustment. Connect the electrostatic voltmeter to the anode cap. Even though an electrostatic voltmeter may not be used, connect a digital multimeter to TP5 on P board.

Note:
- *Use an electrostatic voltmeter which is calibrated to the best, and which has 2 x 10^9 Ω or more input impedance.*
  (example: ESH-27X or ESH-23X of the SINGER COMPANY)
- *Use a digital multimeter which has 4 digit or more, and count a high-voltage from the digital multimeter reading.*

F)

range: dc

regulated-dc power supply

neter (G)

range: dc

Case of electrostatic voltmeter

1. *Turn the CONTRAST and BRIGHTNESS controls fully counterclockwise. (Do not turn them to the locked position.)*
2. *Turn RV1 for a maximum reading on the electrostatic voltmeter.*
3. *Confirm that the reading on the electrostatic voltmeter is between 20.4 kV and 20.8 kV.*
4. *If necessary, select the resistance value of R40 (¼ W metal-oxide) and repeat above steps 2 to 4.*
5. *Adjust RV1 for 20.0 kV on the electrostatic voltmeter.*
6. *Connect a series combination of 1 MΩ variable, 100 kΩ variable and 470 kΩ resitors as shown.*
7. *Turn the 1 MΩ and 100 kΩ variable resistors for a maximum resistance.*
8. *Confirm that the reading on the electrostatic voltmeter drops abruptly from between 23.0 kV and 23.8 kV by turning the 1 MΩ and 100 kΩ variable resistors.*
9. *When the voltage-drop in step 8 is not confirmed with the high-voltage rised enough, turn RV1 (+90 V ADJ) and RV3 (+12 V ADJ) on G board to rise the high-voltage. And confirm that the reading on the electrostatic voltmeter drops abruptly from between 23.0 kV and 23.8 kV.*
10. *When the voltage-drop in steps 8 or 9 is not confirmed, select a resistance value of R41 (¼ W metal-oxide) and repeat above steps 6 through 9.*
11. *Disconnect the series combination of 100 kΩ variable, 1 MΩ variable and 470 kΩ resistors. When the step 9 is performed, adjust RV1 (+90 V ADJ) and RV3 (+12 V ADJ) on G board.*
    RV1 (+90 V ADJ): Adjust RV1 for +90 V dc on the digital multimeter (E).
    RV3 (+12 V ADJ): Adjust RV3 for +12 V dc on the digital multimeter (B).
12. *Connect a regulated dc power supply and a 4.7 kΩ ¼ W carbon resistor across D14 as shown.*
13. *Confirm that the digital multimeter (G) reading is between 20.96 V and 22.30 V.*

Case of Digital Multimeter (F)

Connect the digital multimeter (F) to TP5 on P board, and count a high-voltage from the digital multimeter (F) reading as shown below.
Adjusting procedures are the same as the case of the electrostatic voltmeter.

electrostatic voltmeter reading	*digital multimeter reading (voltage on TP5)*
20.0 kV	*5.427 V*
20.4 kV	*5.536 V*
20.8 kV	*5.644 V*
23.0 kV	*6.241 V*
23.8 kV	*6.458 V*

5-4. CIRCUIT ADJUSTMENTS

JIG,TOOL, AND MEASUREMENT EQUIPMENT REQUIRED

(1) PAL Signal Generator (TEKTRONIX 1411 series for PAL model or 1412 equivalent for PAL-M model)
(2) Oscilloscope (TEKTRONIX 7000 series)
(3) Differential Amplifier Unit (TEKTRONIX 7A13)
(4) Return Loss Bridge (TEKTRONIX 015-0149-00)
} Used for INPUT terminal return loss adjustment.
5 Video Sweep Generator
6 Oscilloscope (with Delay mode)
(7) Tracking Scorp (TAKEDA RIKEN TR4120)
8 Video Frequency Delay Distortion Measurement Equipment
9 High Gain Video Amplifier
10 75 ohms terminator
11 Isolation Transformer
(12) Vector Monitor (TEKTRONIX TYP602 Option Type 05)
13 Digital Voltmeter
14 Attenuator
(15) Linearity Gauge (TEKTRONIX Linearity Graticule PN 331-0305-00)
16 CCD (Charge Coupled Device) Bias Adjust Signal Generator

Note: The measurement equipment whose item number is encircled should be the one specified above.

Switches and controls should be set in the preset position, unless otherwise noted.

1.	INPUT switch	– – –	FREE
2.	SYNC switch	– – –	INT
3.	MODE switch	– – –	AUTO
4.	PHASE control	– – –	Click position
5.	CHROMA control	– – –	Click position
6.	BRIGHTNESS control	– – –	Click position
7.	CONTRAST control	– – –	Click position
8.	APERATUR control	– – –	Click position
9.	UNDER SCAN switch	– – –	NORMAL (UPPER)
10.	V DELAY switch	– – –	NORMAL (UPPER)
11.	H DELAY switch	– – –	NORMAL (UPPER)
12.	BLUE ONLY switch	– – –	NORMAL (UPPER)
13.	AFC switch	– – –	FAST
14.	PAL switch	– – –	D

1. INPUT Terminal Return-loss Adjustment

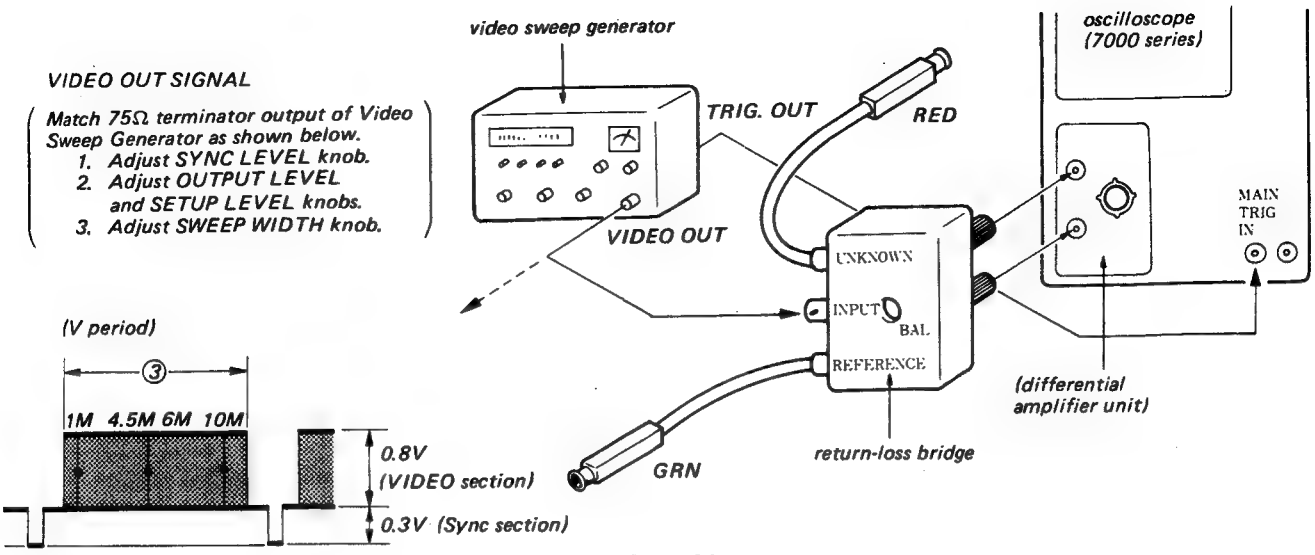


Fig. 5-26.

1. Complete the connections as shown in Fig. 5-26.
2. Set the +INPUT of the 7A13 unit to DC and connect the −INPUT to GND. (Check that the video section of the sweep signal is 0.4Vp-p.)
3. Set the −INPUT of the 7A13 unit to DC and set the VOLT/DIV knob to the 1mV range. Adjust the BAL on the return-loss bridge for minimum output waveform on the oscilloscope. (See Fig. 5-27.)
4. Disconnect the 75 ohm terminator on the UNKNOWN (red) side of the return-loss bridge. Connect the terminator to the VIDEO A terminal of this monitor with the cable. (See Fig. 5-28.)
5. Turn on the power of this monitor. Set the INPUT switch to the A position and the SYNC switch to the INT position.
6. Adjust CV1 on the Q board for minimum output waveform (but it should be below 2mVp-p in a range of 0 to 10MHz).
7. Turn off the power of this monitor and confirm the output waveform is below 2mVp-p in a range of 0 to 10 MHz.
8. Perform each adjustment of the VIDEO B (CV3), EXT SYNC (CV5), R (CV6), G (CV8), and B (CV10) terminals in the similar procedure.
   INPUT switch setting should be as below.
   For VIDEO B terminal adjustment . . . . B
   For R, G, or B terminal adjustment . . . . RGB

[oscilloscope waveform]

Adjust BAL of return-loss bridge so that marked with ※ becomes as flat as possible in a range of 0 to 10MHz and minimum (below 1mVp-p).

Fig. 5-27.

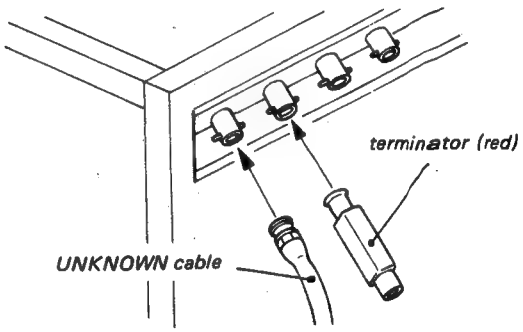


Fig. 5-28.

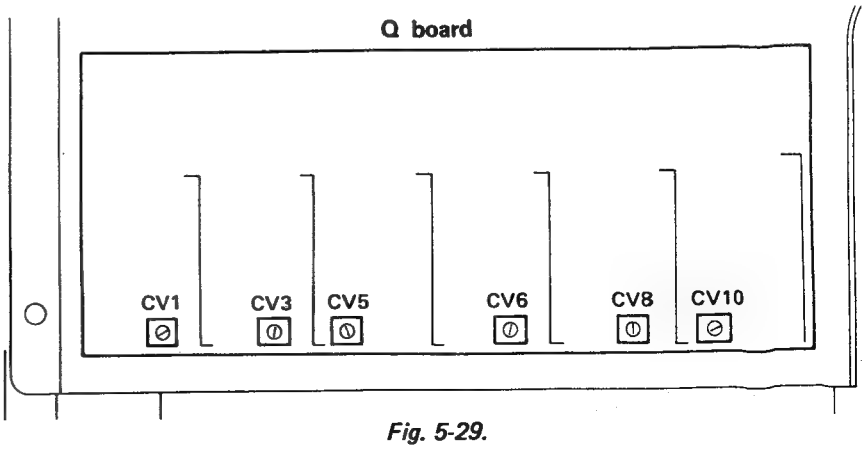


Fig. 5-29.

2. Q Board Input Circuit Level Adjustment

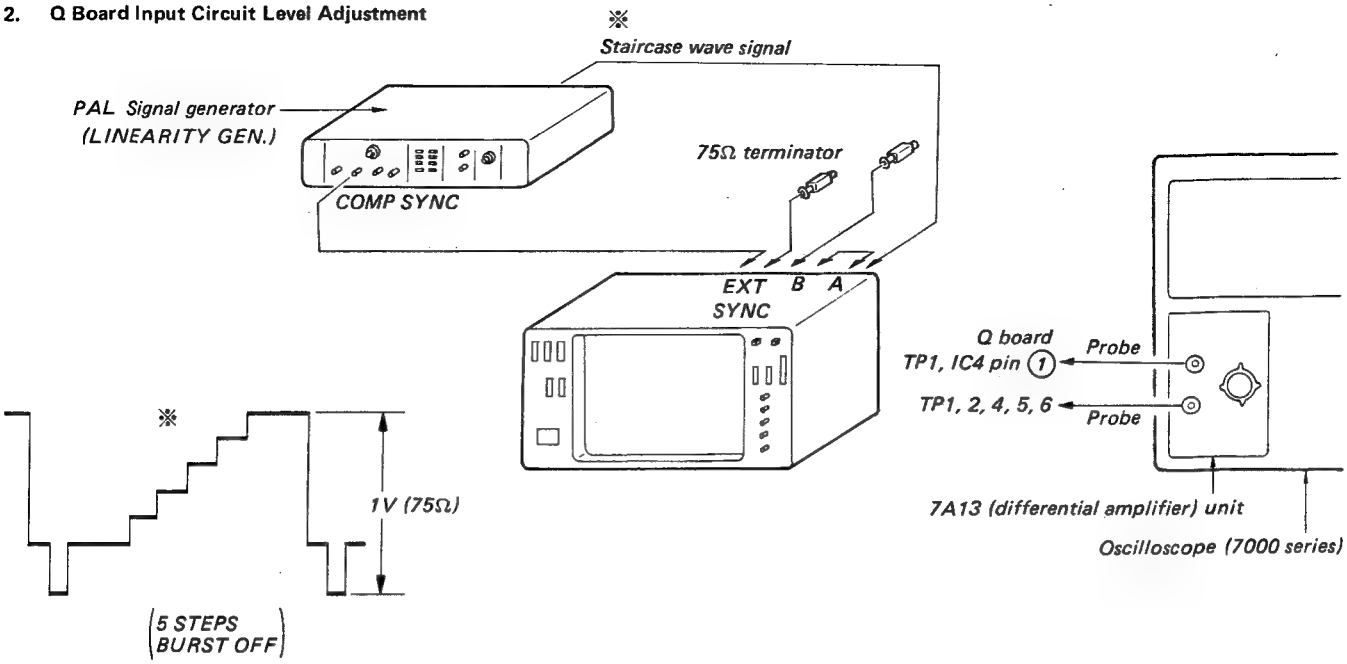


Fig. 5-30.

1. Complete the connections as shown in Fig. 5-30. (Connect the staircase wave signal to the VIDEO A terminal, the VIDEO A terminal to the VIDEO B terminal, and the 75Ω terminator to the terminal B.)
   The length of cable between the VIDEO A terminal and VIDEO B terminal should be less than 1m.
2. Turn on the power of this monitor. Set the SYNC switch to the EXT position, and the INPUT switch to the A position.
3. Connect both probes of the oscilloscope (both +INPUT and −INPUT) to TP1 on the Q board.
   Set both +INPUT and −INPUT to AC, and set the VOLT/DIV knob to the 1 mV range.
4. At this time, the oscilloscope output waveform should be flat. (Probe calibration)
5. Connect the −INPUT side probe to TP2 on the Q board, and adjust RV1 so that the output waveform is flat (the same as that in step 4). (See Fig. 5-31.)
6. Connect the VIDEO A terminal to the R terminal (cable: less than 1m), and connect the 75Ω terminator to the R terminal. Connect the +INPUT side probe to the pin 1 of IC4, and the −INPUT side probe to TP4. Adjust RV2 in the same way as that in step 5.
7. Connect the VIDEO A terminal to the G terminal, and connect the 75Ω terminator to the G terminal. Connect the −INPUT side probe to TP5, and adjust RV3 in the same way.
8. Connect the VIDEO A terminal to the B terminal, and connect the 75Ω terminator to the B terminal. Connect the −INPUT side probe to TP6, and adjust RV4 in the same way.

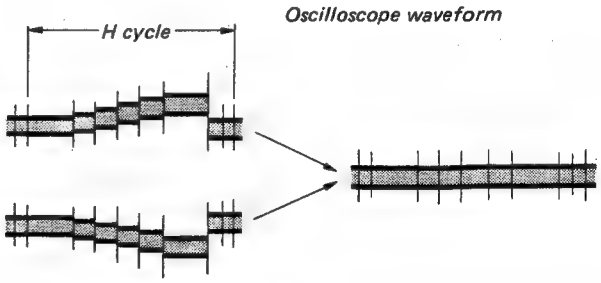


Fig. 5-31.

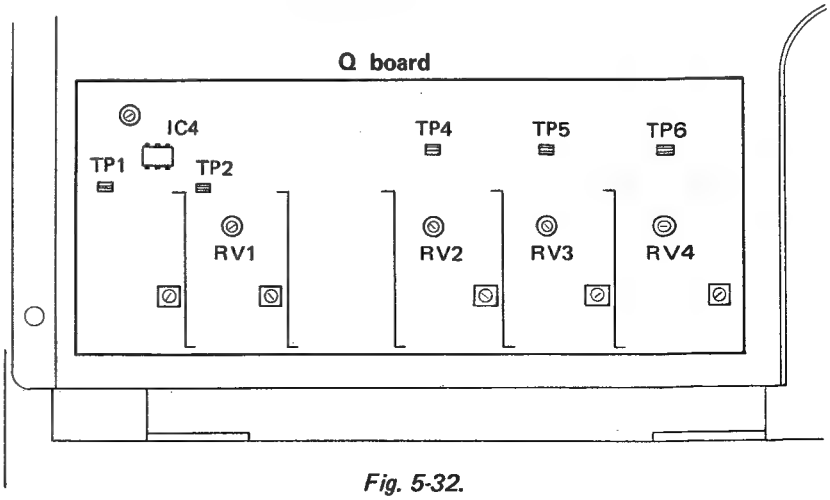


Fig. 5-32.

3. Q Board Input Circuit Frequency Characteristic Adjustment

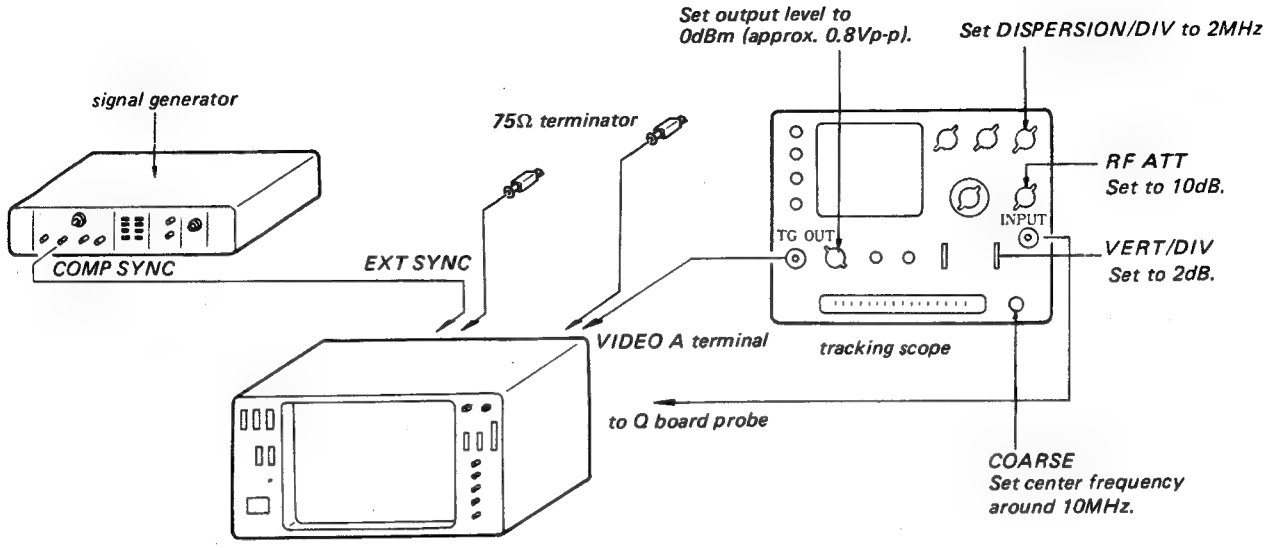
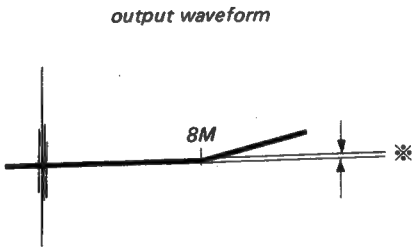


Fig. 5-33.

1. Complete the connections as shown in Fig. 5-33.
2. Connect the tracking scope probe to the THROUGH-OUT of the 75 Ω terminator connected to the VIDEO A terminal of the machine.
   Check that the output waveform on the tracking scope is flat in a range of 0 to 8 MHz. (Probe correction)
3. Turn on the power of this monitor. Set the SYNC switch to EXT.
4. Connect the probe to TP 1 on the Q board and adjust CV 2 so that the output waveform becomes flat in a range of 0 to 8 MHz. (See Fig. 5-34.)
5. Connect the TG OUT and the 75 Ω terminator to the VIDEO B terminal.
   Connect the probe to TP 2 and adjust CV 4 in the same way as in the VIDEO A circuit.
6. Adjust R (TP 4, CV 7), G (TP 5, CV 9), B (TP 6, CV 11) circuits in the same way.



※ *Adjust to be flat in the range of 0 to 8MHz.*

Fig. 5-34.

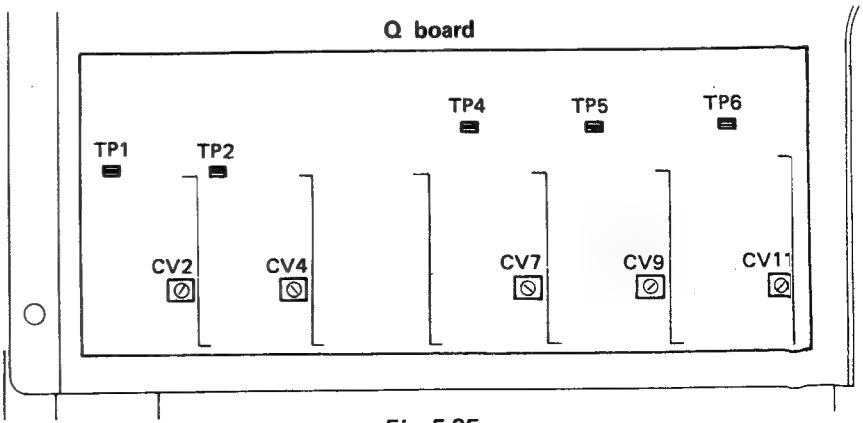


Fig. 5-35.

4. Q Board Clamp Pulse Width Adjustment

1. Complete the connections as shown in Fig. 5-36.
2. Turn on the power of this monitor. Set the INPUT switch to RGB and the SYNC switch to INT.
3. Adjust RV 5 on the Q board for a clamp pulse width of 3 μs. (See Fig. 5-37.)

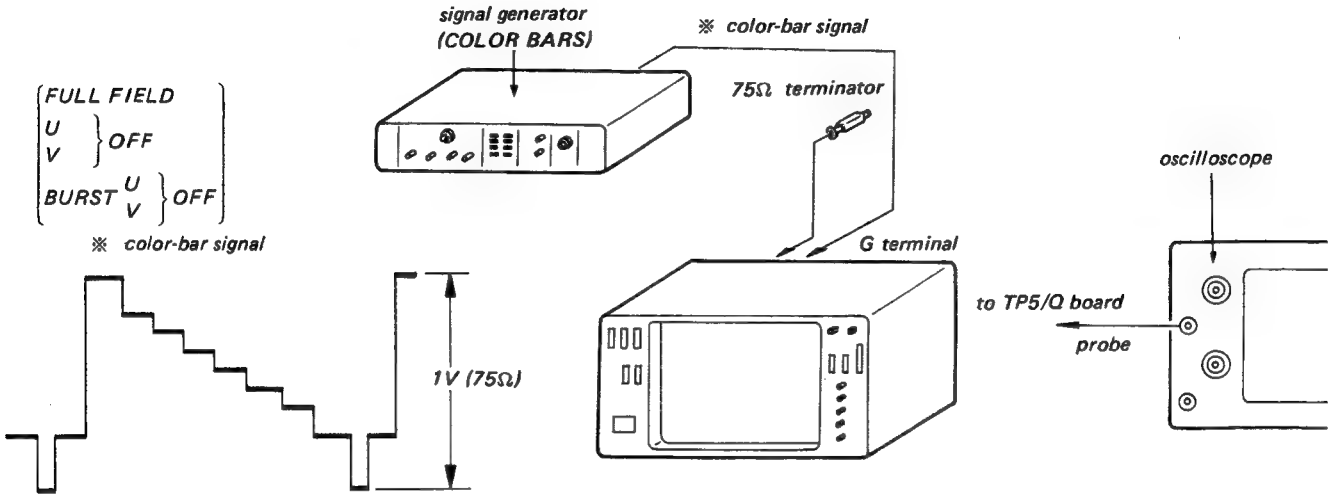


Fig. 5-36.

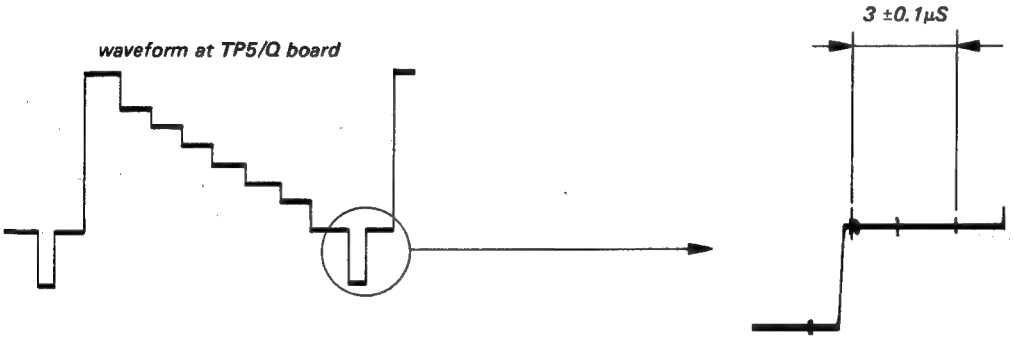


Fig. 5-37.

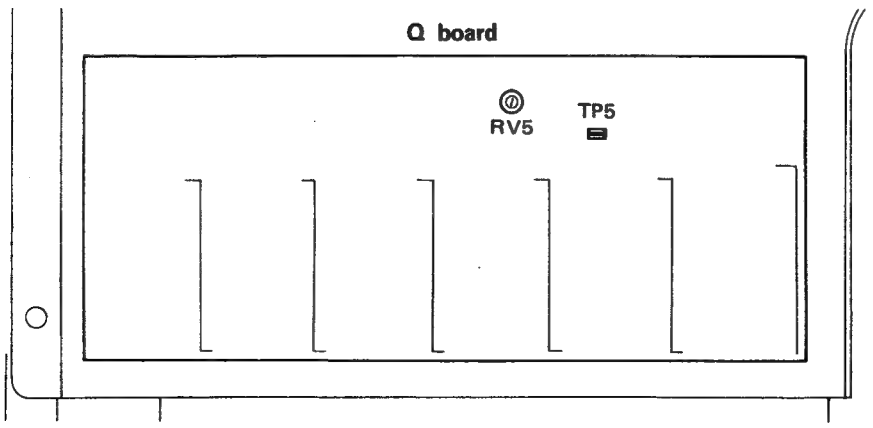


Fig. 5-38.

5. B Board Band Pass Amplifier Frequency characteristic adjustment

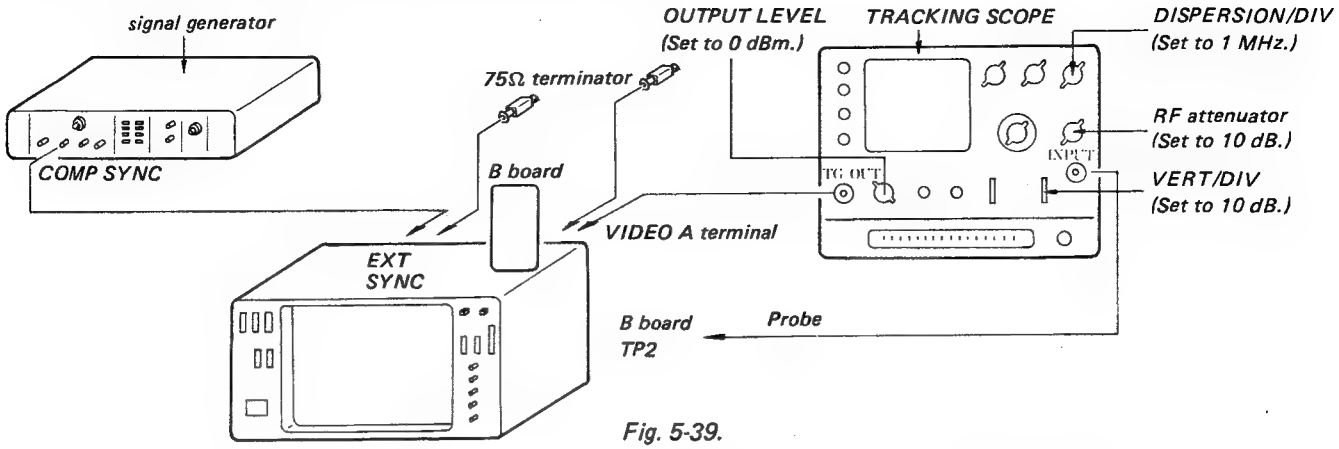


Fig. 5-39.

1. Complete the connections as shown in Fig. 5-39.
2. Ground the pin 6 of IC2 on the B board. (Ground: TP4)
3. Turn on the power of this monitor. Set the INPUT switch to the A position, the SYNC switch to the EXT position, and the CHROMA control to the MIN position.
4. Set the center frequency of the tracking scope to 4.43 MHz (PAL) or 3.58 MHz (PAL-M).
5. Connect the probe to TP2 on the B board.
6. Adjust CV1 on the B board so that the output waveform (near 4.43 MHz or 3.58 MHz) of the tracking scope is minimum. (See Fig. 5-40.)
7. Set the DISPERSION/DIV of the tracking scope to 1 MHz, and the VERT/DIV to 2dB. Then, click the CHROMA control.
8. Set the center frequency of the tracking scope to 4.43 MHz (PAL) or 3.58 MHz (PAL-M) accurately.
9. Connect the probe to the 75Ω terminator THROUGH OUT for the VIDEO A terminal of this monitor.
   At this time, the output waveform of the tracking scope should be flat in the range of 4.43 ± 2 MHz (PAL) or 3.58 ± 1.5 MHz (PAL-M). (Probe calibration)
10. Connect the probe to TP2 on the B board.
11. For PAL model
    Adjust L1 and L3 on the B board so that the output waveform of the tracking scope is −2.8 dB in the range of 4.43 ± 2 MHz.
    (Repeat the tracking two or three times by adjusting the −2 MHz side with L1, first, and the +2 MHz side with L3.)
    For PAL-M model
    Adjust L1 on the B board so that the output waveform of the tracking scope is −3.0 dB in the range of 3.58± 1.5 MHz.
12. Disconnect the pin 6 of IC2 from the ground.

Note: Adjustment should be made accurately using the signal generator and the attenuator, since neither the frequency nor LEVEL (dB) scales of the tracking scope are accurate.

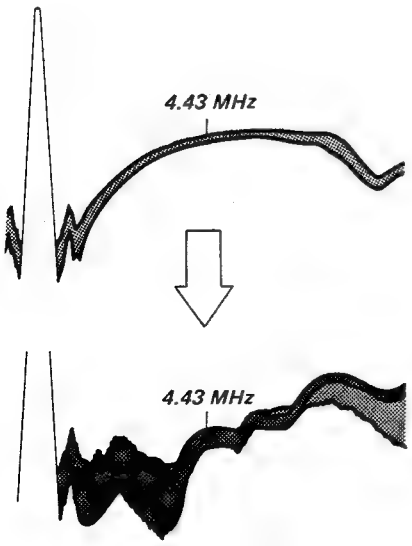


Fig. 5-40.

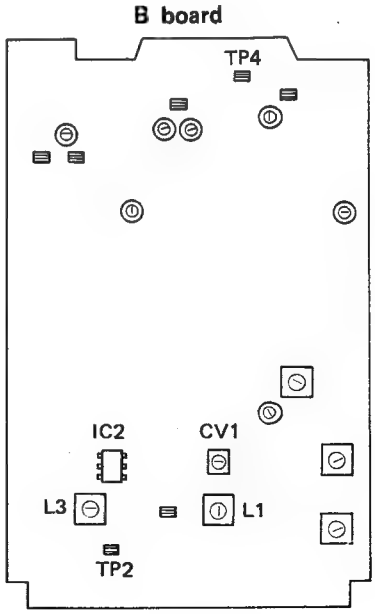


Fig. 5-42.

6. B Board Burst Gate Pulse Width Adjustment

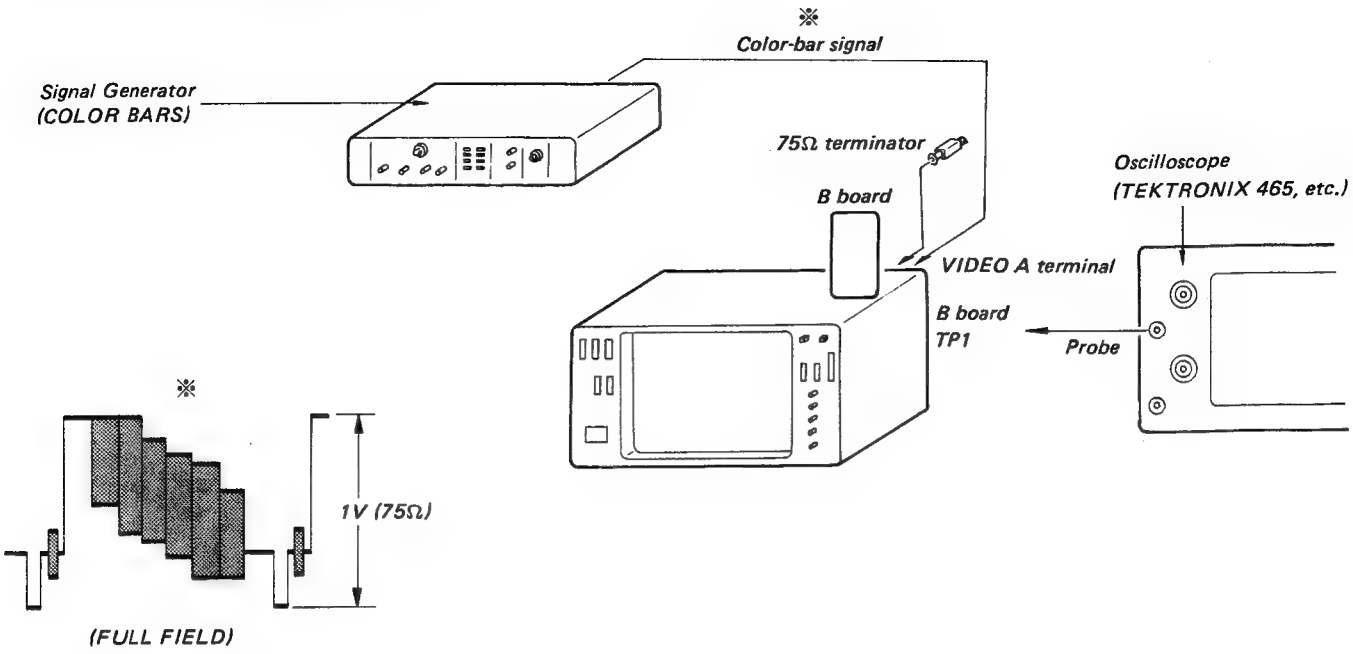


Fig. 5-43.

1. Complete the connections as shown in Fig. 5-43.
2. Turn on the power of this monitor. Set the INPUT switch to the A position, and the SYNC switch to the INT position.
3. Connect the oscilloscope probe to TP1 on the B board.
4. Adjust RV7 on the B board to set the burst gate pulse width to 4μs. (See Fig. 5-44.)

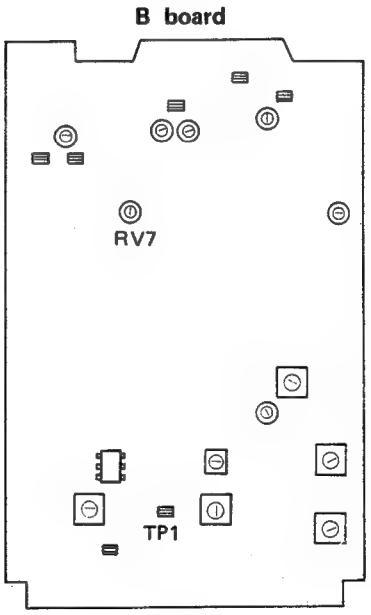
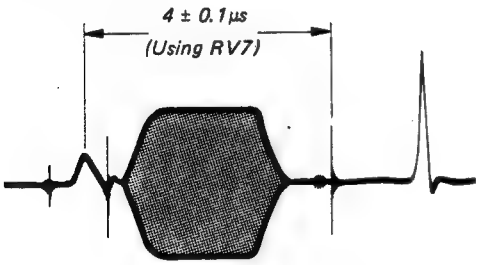


Fig. 5-44.

TP1 on the B board



Specification *4 ± 0.1μs*

Fig. 5-45.

7. B Board Y Clamp Pulse Width Adjustment

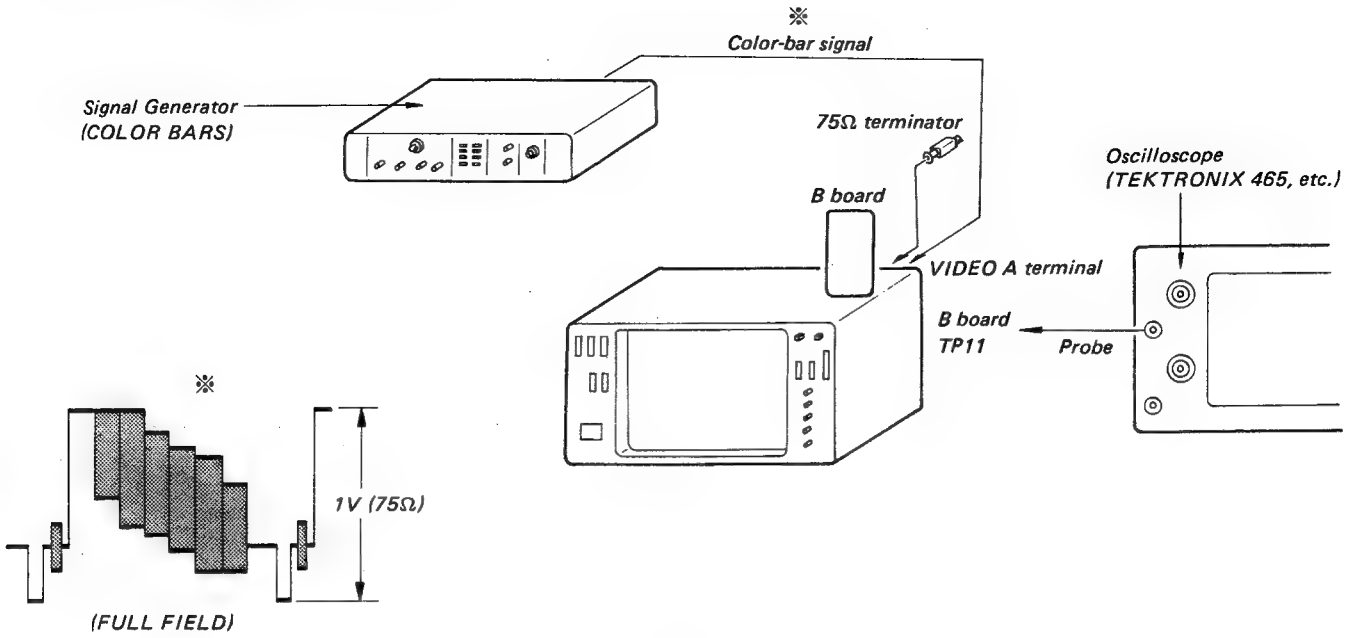


Fig. 5-46.

1. Complete the connections as shown in Fig. 5-46.
2. Turn on the power of this monitor. Set the INPUT switch to the A position, and the SYNC switch to the INT position.
3. Connect the oscilloscope probe to TP11 on the B board.
4. Adjust RV8 on the B board to set the Y clamp pulse width to 0.5μs. (See Fig. 5-47.)

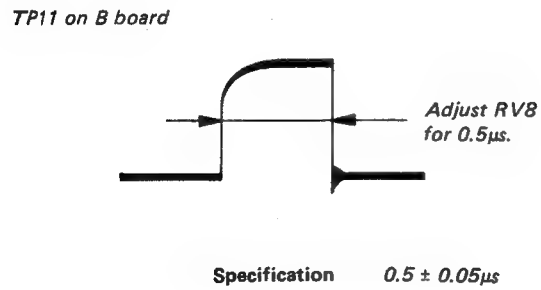


Fig. 5-47.

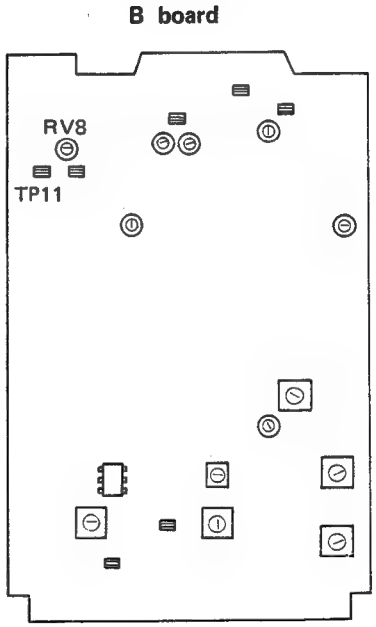


Fig. 5-48.

8. B Board 1H Sync Pulse Adjustment

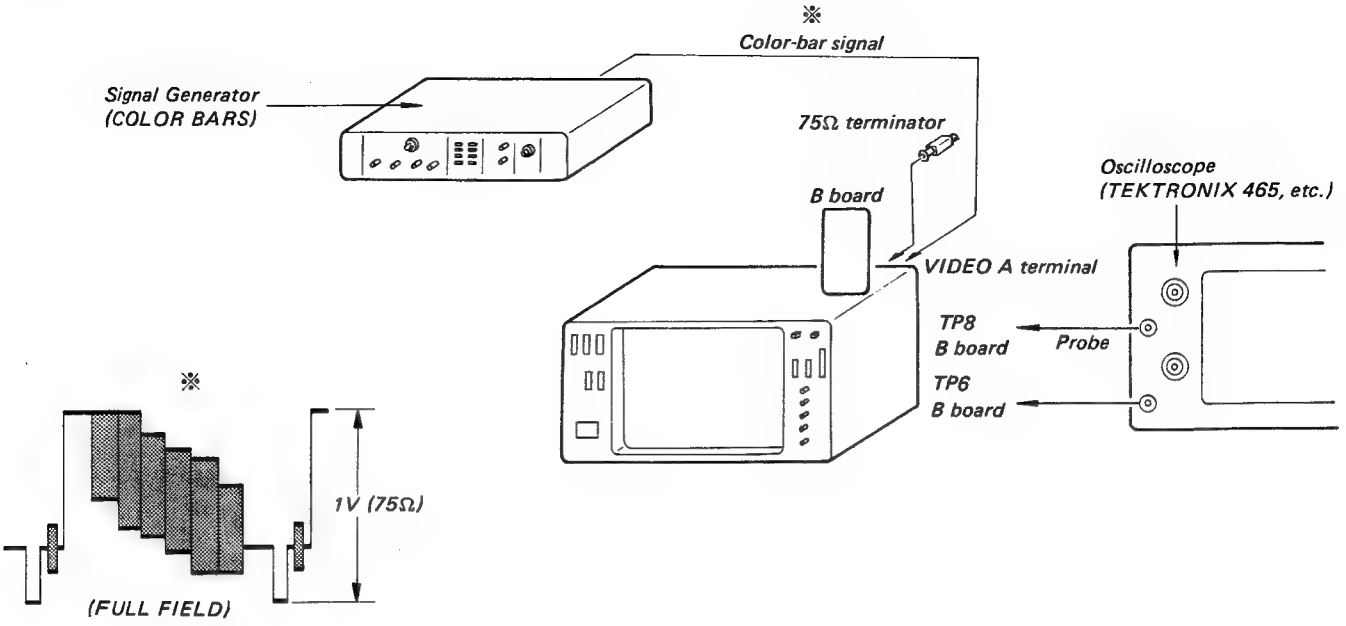


Fig. 5-49.

1. Complete the connections as shown in Fig. 5-49.
2. Turn on the power of this monitor. Set the INPUT switch to the A position, and the SYNC switch to the INT position.
3. Connect the probe of the oscilloscope CH1 to TP8 on the B board, and the probe of CH2 to TP6 on the B board.
4. Adjust the 1H sync pulse in NORMAL mode by turning RV6 on the B board. (See Fig. 5-50.)
   (The DELAY switch should be set at the NORMAL position.)
5. Set the H DELAY switch to the H DELAY position.
6. Adjust the 1H sync pulse in H DELAY mode by turning RV5 on the B board. (See Fig. 5-50.)

Note: If linearity adjustment has been made after this adjustment, readjust them.

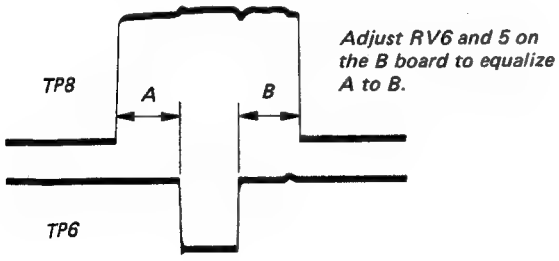


Fig. 5-50.

B board

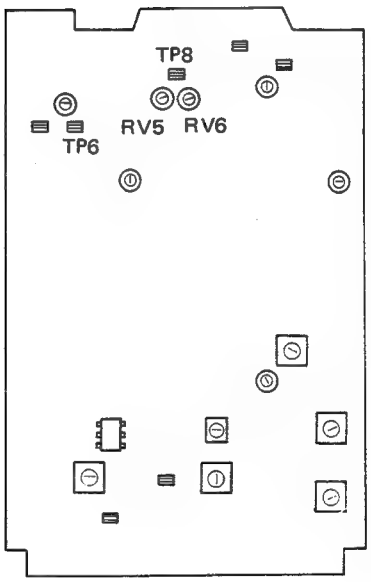


Fig. 5-51.

9. Overall Frequency Characteristic Adjustment

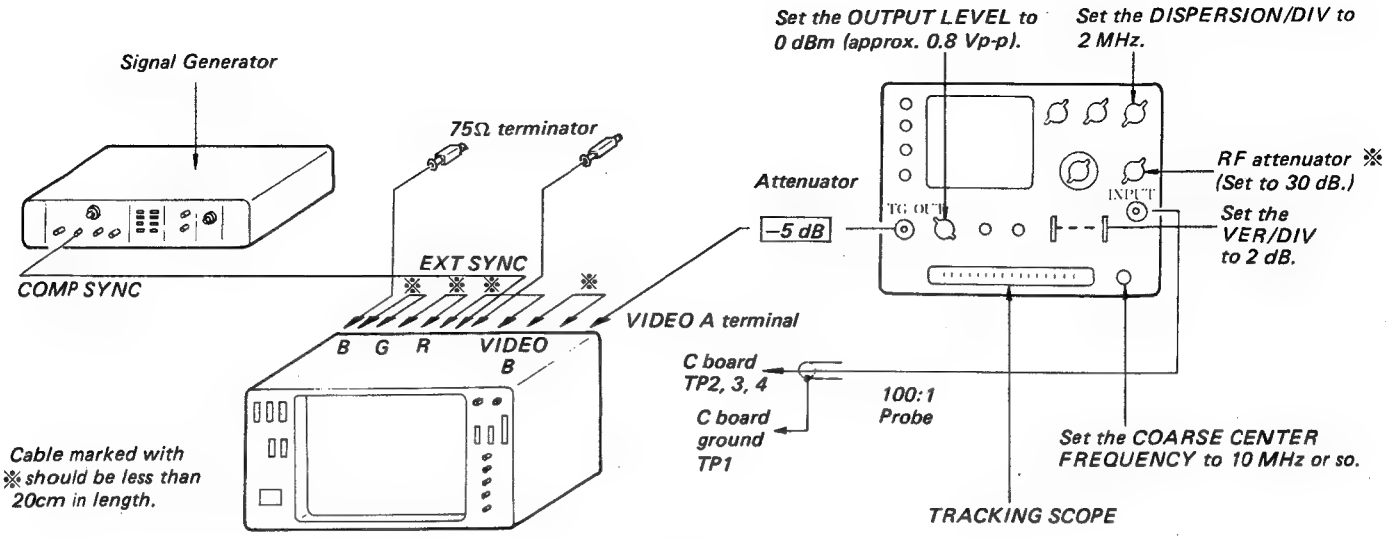


Fig. 5-52.

1. Complete the connections as shown in Fig. 5-52.
2. Turn on the power of this monitor. Set the INPUT switch to the RGB position, the SYNC switch to the EXT position, the MODE switch to the B/W position, and the BRIGHTNESS control to the MAX position.
3. Connect the probe (100:1) to the THROUGH OUT for the 75Ω terminator connected with the B terminal.
   At this time, make sure the output waveform is flat in the range of 0 to 8 MHz. (Probe calibration)
4. Connect the probe to TP2 (R) on the C board. (ground: TP1) Adjust CV1 on the BE board so that the output waveform is flat in the range of 0 to 6 MHz.
5. Connect the probe to TP3 (G) on the C board, and adjust CV2 on the BE board so that the output waveform is flat in the range of 0 to 6 MHz.
6. Connect the probe to TP4 (B) on the C board, and adjust CV3 on the BE board so that the output waveform is flat in the range of 0 to 6 MHz.
7. Set the INPUT switch to the TEST position, and connect the probe to TP3 (G) on the C board.
   Adjust RV2, RV1 and L6 on the B board, and RV6 on the Q board so that the G waveform in the TEST system coincides with the G waveform in the RGB system in the range of 0 to 6 MHz. (See Fig. 5-53.)
   (It is recommended that it be done while switching-over the INPUT switch between RGB and TEST.)
   Adjust RV1, 2 and L6 so that the output waveform is linear as far as possible. (Set the standing-wave ratio to minimum.)

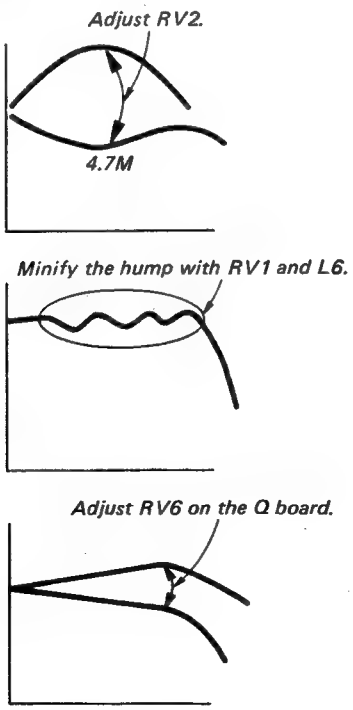


Fig. 5-53.

Specification (COMP system)

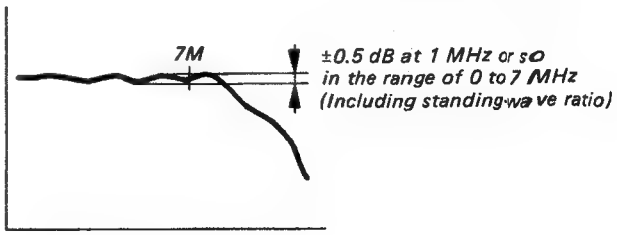


Fig. 5-54.

8. Set the INPUT switch to the TEST position, and connect the probe to TP2 on the C board first, and then also to TP4. Make sure each waveform is exactly equal to TP3 waveform. (If not, adjust CV1, 2 and 3 on the BE board.)
9. Set the INPUT switch to the RGB position.
10. Connect the probe to TP2 (R) on the C board, and adjust CV7 on the Q board so that the output waveform is flat in the range of 0 to 8 MHz. (See Fig. 5-55.)
11. Connect the probe to TP3 (G) on the C board, and adjust CV9 on the Q board so that the output waveform is flat in the range of 0 to 8 MHz. (See Fig. 5-55.)
12. Connect the probe to TP4 (B) on the C board, and adjust CV11 on the Q board so that the output waveform is flat in the range of 0 to 8 MHz. (See Fig. 5-55.)
13. Set the INPUT switch to the TEST position, and adjust RV6 on the Q board so that the output waveform is flat in the range of 0 to 7 MHz. (See Fig. 5-54.)
14. Set the INPUT switch to the A position, and adjust CV2 on the Q board so that the output waveform is flat in the range of 0 to 7 MHz. (See Fig. 5-54.)
15. Set the INPUT switch to the B position, and adjust CV4 on the Q board so that the output waveform is flat in the range of 0 to 7 MHz. (See Fig. 5-54.)
16. Make sure everything is within its specification by changing the INPUT switch position to A, B, RGB and TEST sequentially.
17. Set the INPUT switch to the A position, and make sure everything is within its specification by changing the probe connection position to TP2, TP3 and TP4 on the C board sequentially.
18. Set the INPUT switch to the RGB position, and make sure everything is within its specification in the same way as that in step 17.

Note: Since frequency characteristic is different in the case when the board is set on a dummy board (Z board) from the case when the board is mounted for actual use, speculative adjustment is necessary by taking the correlation between them into consideration.
(Fig. 5-54 and 5-55 show the case when the board is actually mounted.)

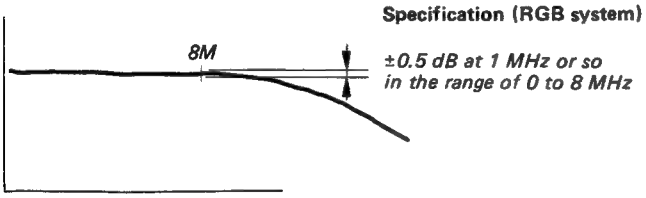


Fig. 5-55.

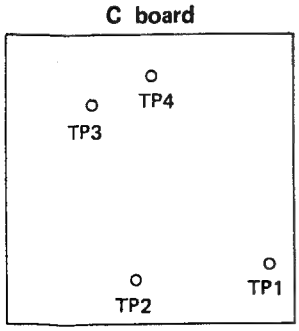


Fig. 5-56.

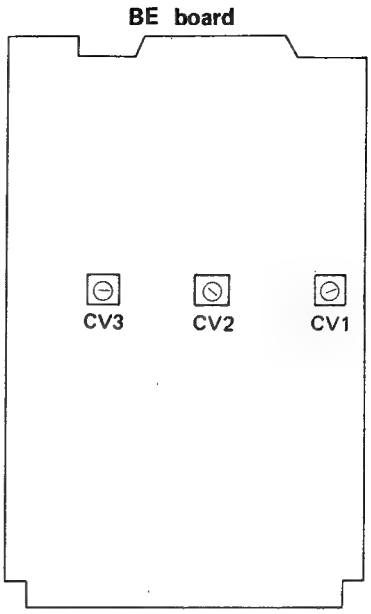


Fig. 5-57.

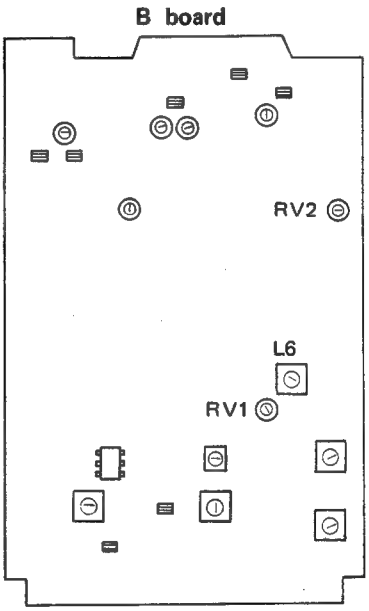


Fig. 5-58.

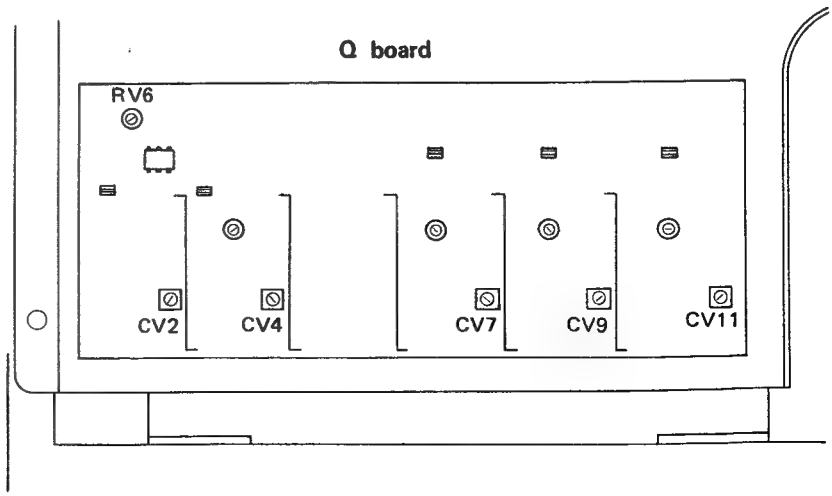


Fig. 5-59.

10. B Board Y Level Adjustment

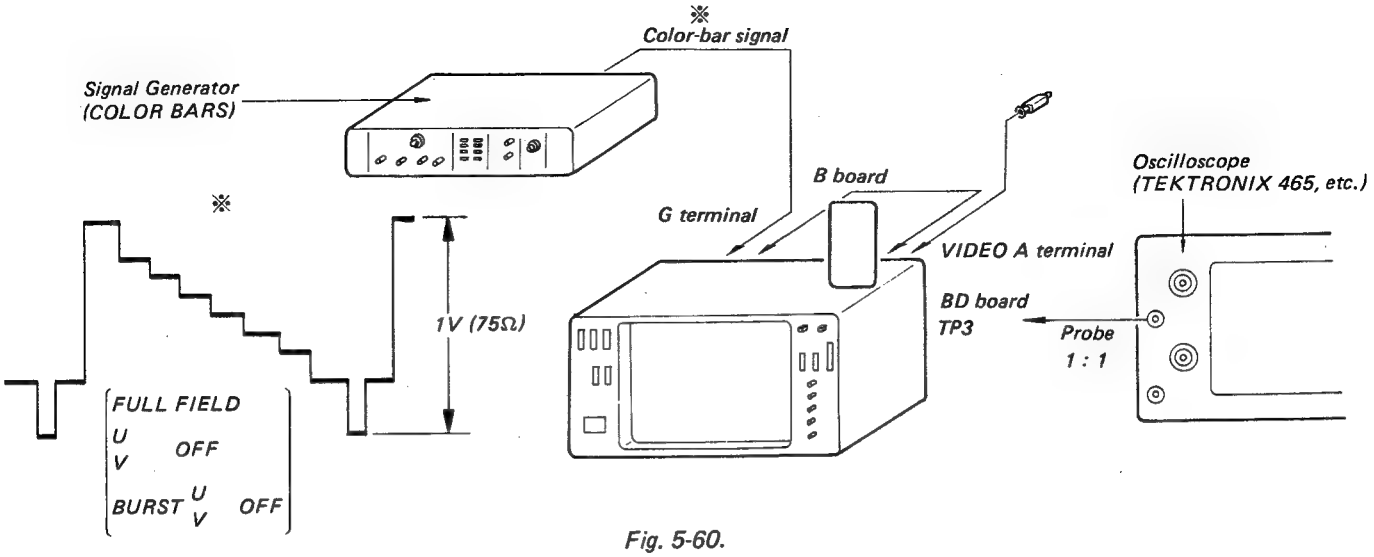


Fig. 5-60.

1. Complete the connections as shown in Fig. 5-60.
2. Turn on the power of this monitor. Set the INPUT switch to the RGB position, and the SYNC switch to the INT position.
3. Connect the oscilloscope probe (1:1) to TP3 on the BD board.
4. Set the BRIGHTNESS control to the MIN position (just before it clicks). Turn the CONTRAST control so that the BRIGHTNESS pulse level coincides with the 100% WHITE level. (See Fig. 5-61.)
   Next, set the oscilloscope sensitivity to 10mV/DIV, and set them to the same level accurately.
5. Set the INPUT switch to the A position, and adjust RV3 on the B board so that the BRIGHTNESS pulse level coincides with the 100% WHITE level.
6. Set the INPUT switch to the TEST position, and make sure the BRIGHTNESS pulse level coincides with the 100% WHITE level accurately. (The result should be the same as that in each step 4 and 5.)

TP3 on the BD board

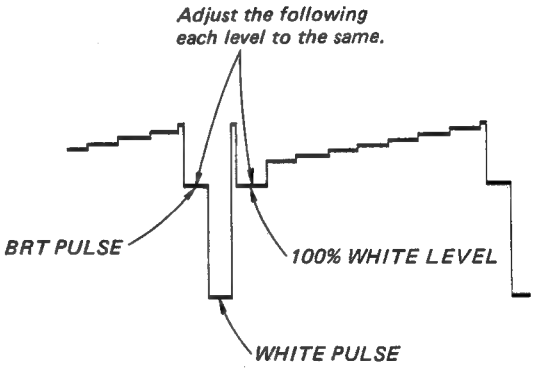


Fig. 5-61.

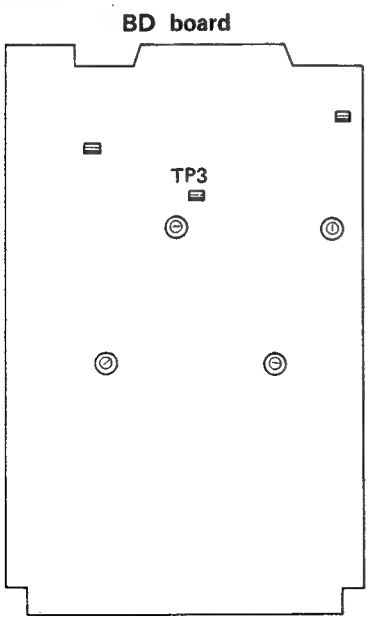


Fig. 5-62.

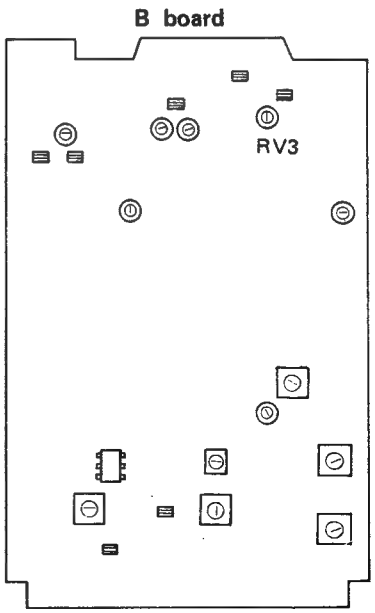


Fig. 5-63.

11. B Board 4.43 MHz (PAL) or 3.58 MHz (PAL-M) Trap Adjustment

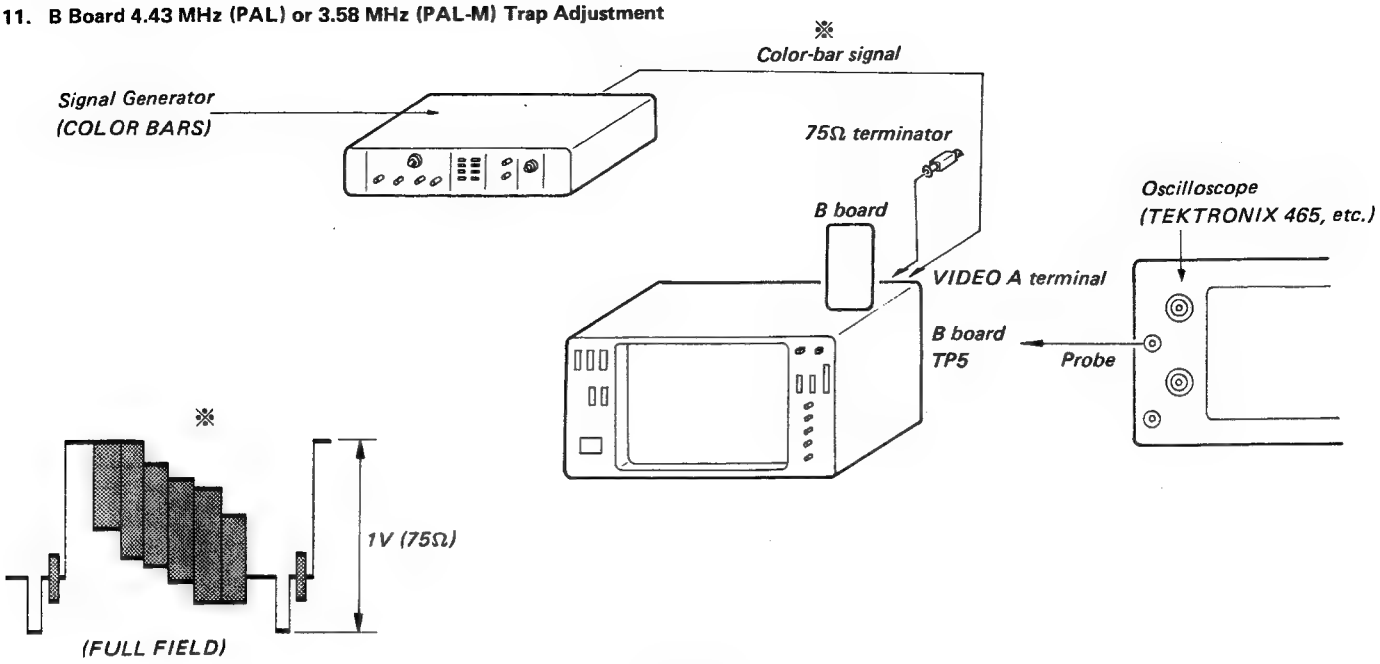


Fig. 5-64.

1. Complete the connections as shown in Fig. 5-64.
2. Turn on the power of this monitor. Set the INPUT switch to the A position, and the SYNC switch to the INT position.
3. Connect the oscilloscope probe to TP5 on the B board.
4. Adjust L4 on the B board so that the 4.43 MHz (PAL) or 3.58 MHz (PAL-M) component is minimum. (See Fig. 5-65.)

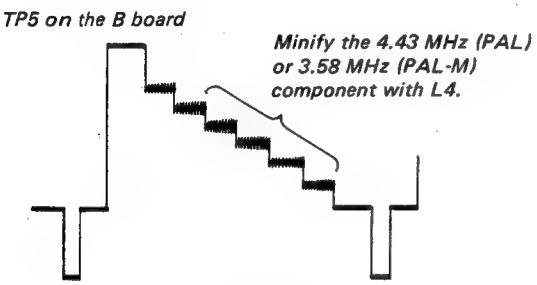


Fig. 5-65.

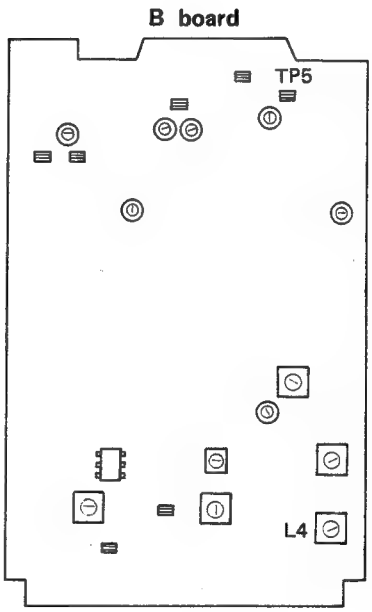


Fig. 5-66.

12. B Board 2T Pulse Correction Adjustment

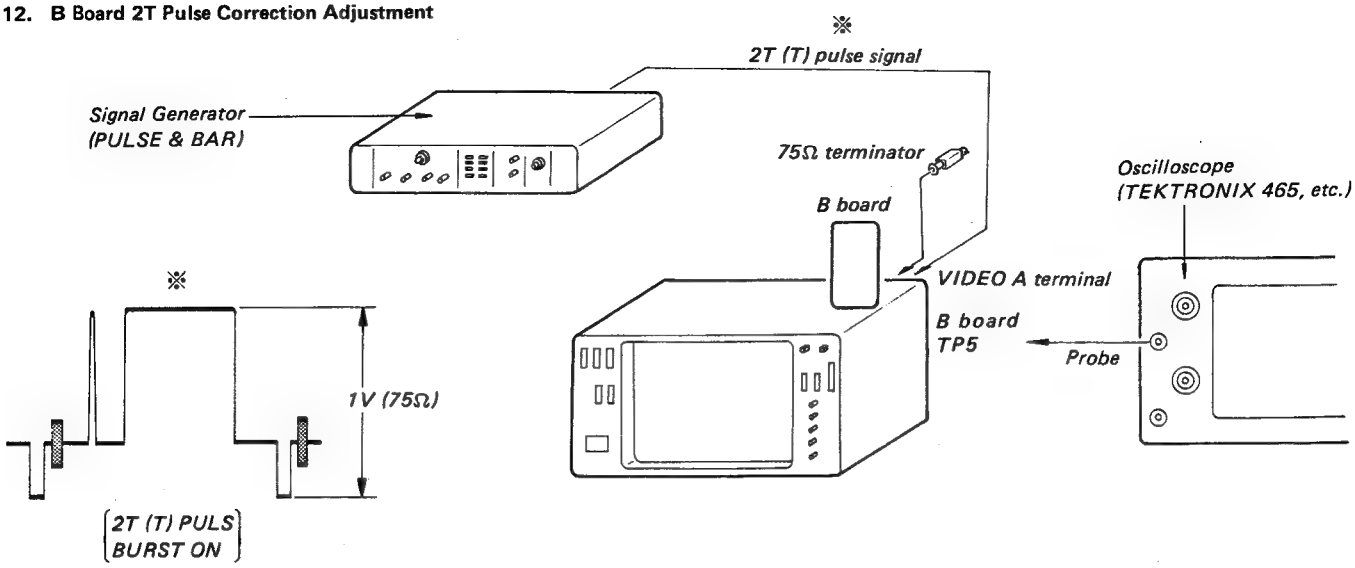


Fig. 5-67.

1. Complete the connections as shown in Fig. 5-67.
2. Turn on the power of this monitor. Set the INPUT switch to the A position, and the SYNC switch to the INT position.
3. Connect the oscilloscope probe to TP5 on the B board.
4. Adjust L5 on the B board so that A is equal to B as shown in Fig. 5-68.
5. Change the input signal from 2T pulse to T pulse, and make sure the waveform balance is not lost extremely. (See Fig. 5-69.)

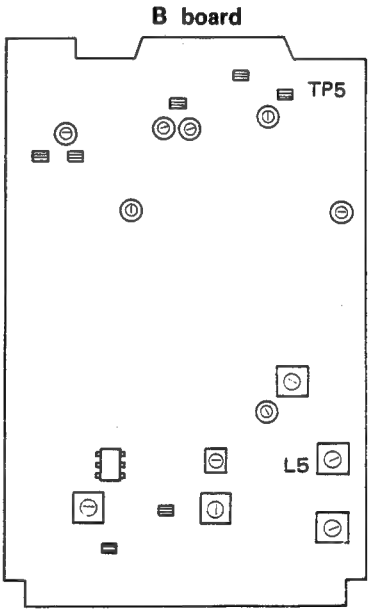


Fig. 5-70.

TP5 on the B board

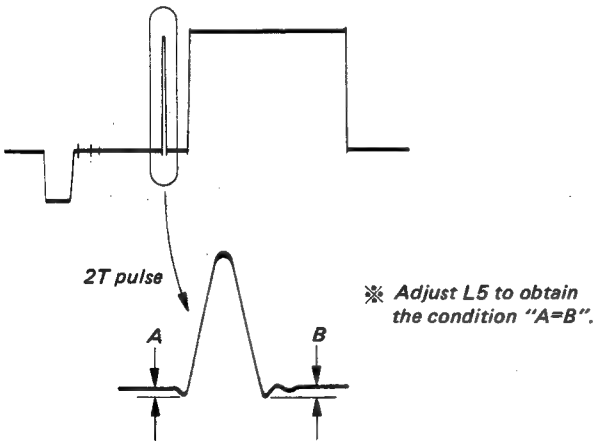


Fig. 5-68.

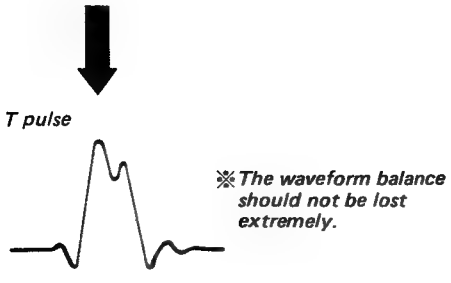


Fig. 5-69.

13. BA Board Color Difference L.P. Filter Adjustment

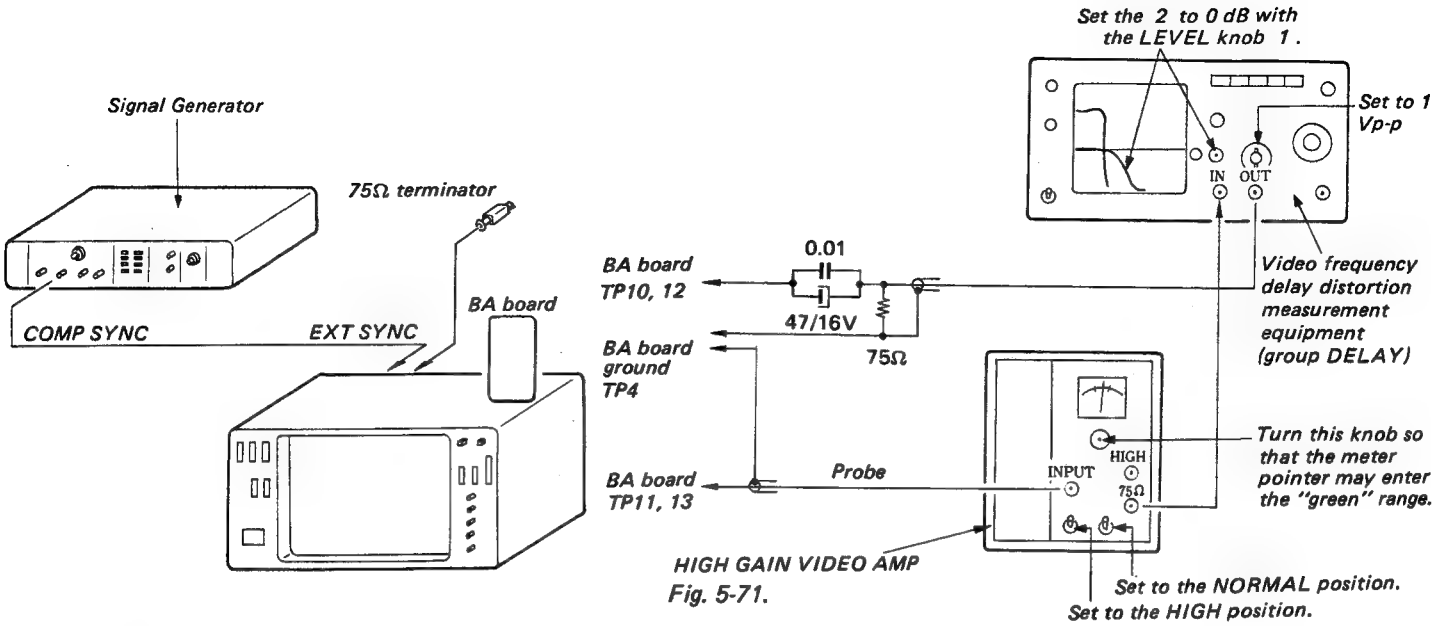


Fig. 5-71.

1. Complete the connections as shown in Fig. 5-71. Turn on the power of this monitor, and set the SYNC switch to the EXT position.
2. Connect the output of the group DELAY measurement equipment to TP10 on the BA board via the capacitor, and connect the probe to TP11.
3. Adjust the group DELAY characteristic of the B-Y L.P. filter so that the flat area is maximum by turning L4 and L5 on the BA board. (See Fig. 5-72.)
4. Connect the output of the group DELAY measurement equipment to TP12, and the probe to TP13.
5. Adjust the R-Y L.P. filter in the same way as that in step 3 by turning L6 and L7 on the BA board.

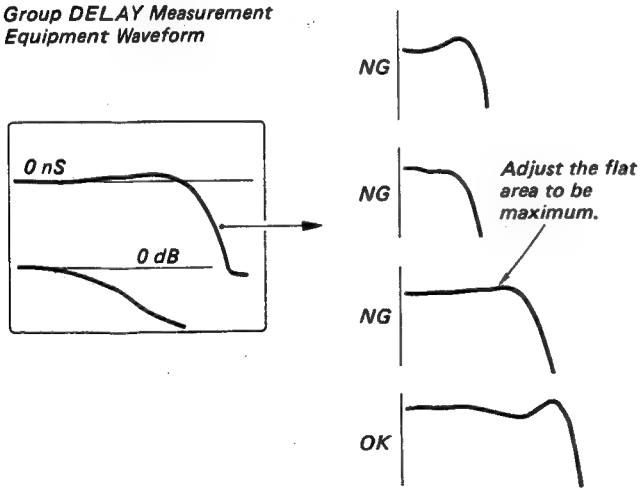


Fig. 5-72.

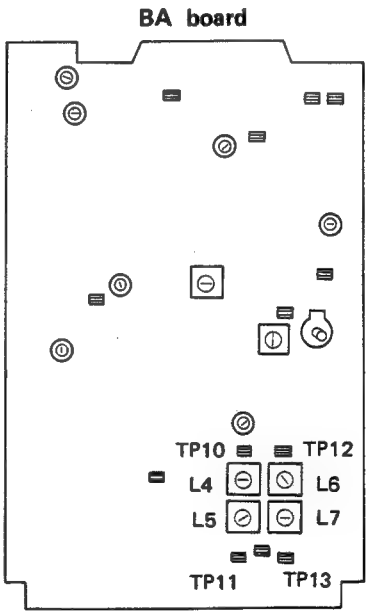
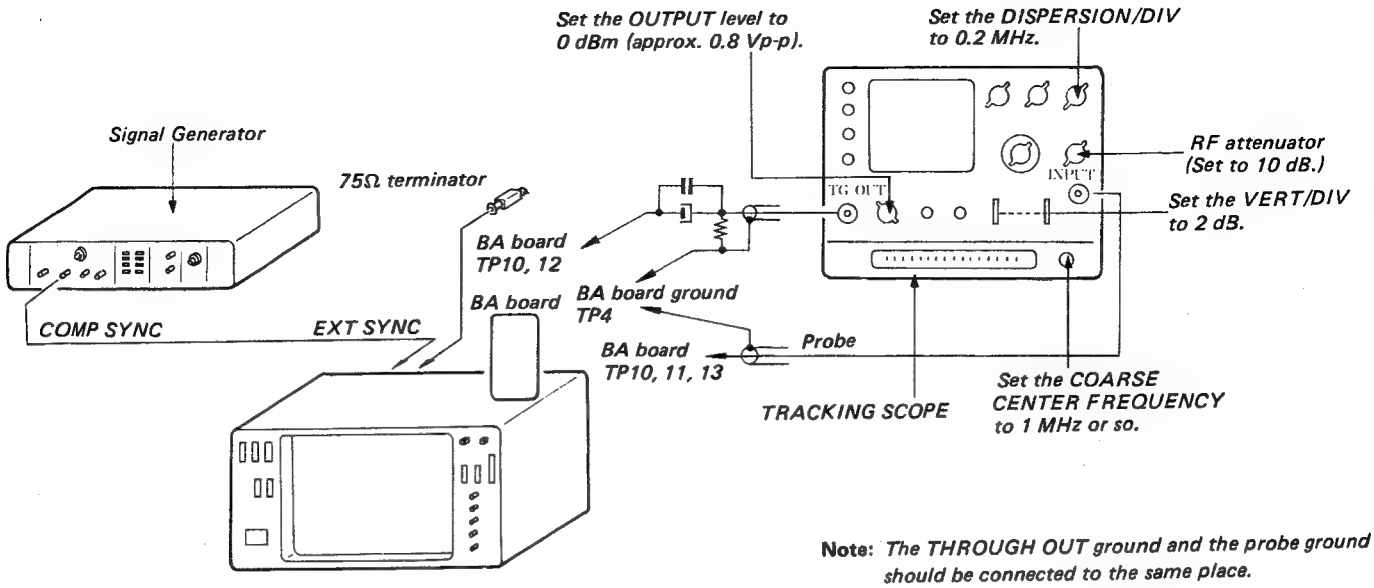


Fig. 5-73.



Note: *The THROUGH OUT ground and the probe ground should be connected to the same place.*

Fig. 5-74.

6. Complete the connections as shown in Fig. 5-74.
7. Connect the THROUGH OUT of the tracking scope to TP12 on the BA board via the capacitor, and connect the probe to TP12.
   At this time, the output waveform indicated on the tracking scope should be flat in the range of 0 to 2 MHz. (Probe calibration)
8. Connect the probe to TP13, and make sure the frequency characteristic of the R-Y L.P. filter circuit is within its specification. (See Fig. 5-75.)
9. Connect the THROUGH OUT signal to TP10, and the probe to TP11. Make sure the frequency characteristic of the B-Y L.P. filter circuit is within its specification. (See Fig. 5-75.)

Note: Adjustment should be made accurately using the signal generator and the attenuator, since neither the frequency nor LEVEL (dB) scales of the tracking scope are accurate.

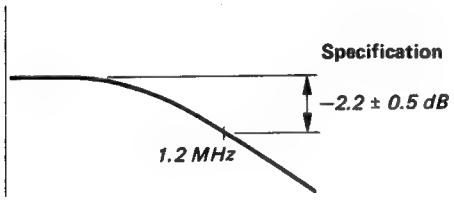


Fig. 5-75.

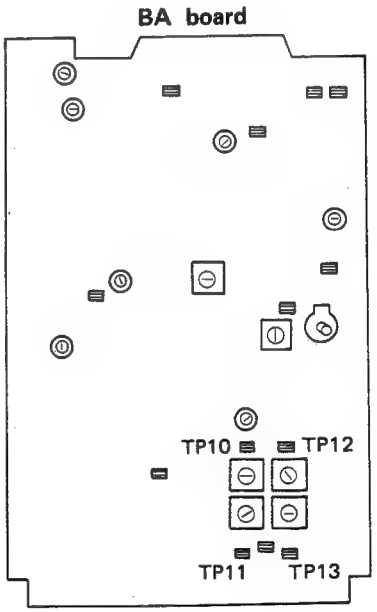


Fig. 5-76.

14. BA Board Burst Amplifier Adjustment

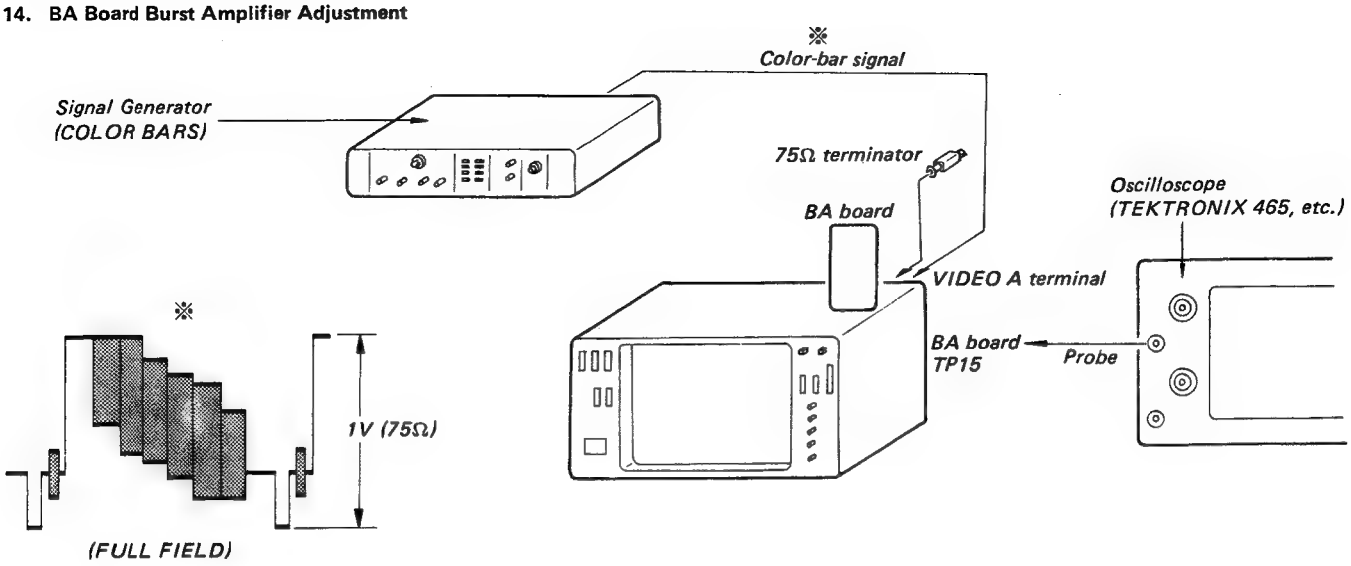
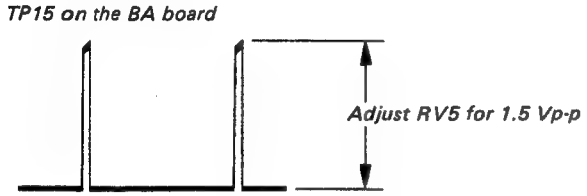


Fig. 5-77.

1. Complete the connections as shown in Fig. 5-77.
2. Turn on the power of this monitor. Set the INPUT switch to the A position, and the SYNC switch to the INT position.
3. Connect the oscilloscope probe to TP15 on the BA board.
4. Adjust RV5 on the BA board so that the oscilloscope output waveform is 1.5 Vp-p. (See Fig. 5-78.)



Specification *1.5 ± 0.1 Vp-p*

Fig. 5-78.

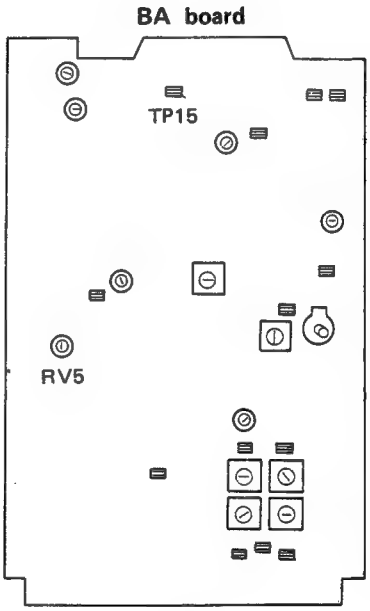


Fig. 5-79.

15. BA Board 4.43 MHz (PAL) or 3.58 MHz (PAL-M) Oscillator Amplitude Adjustment

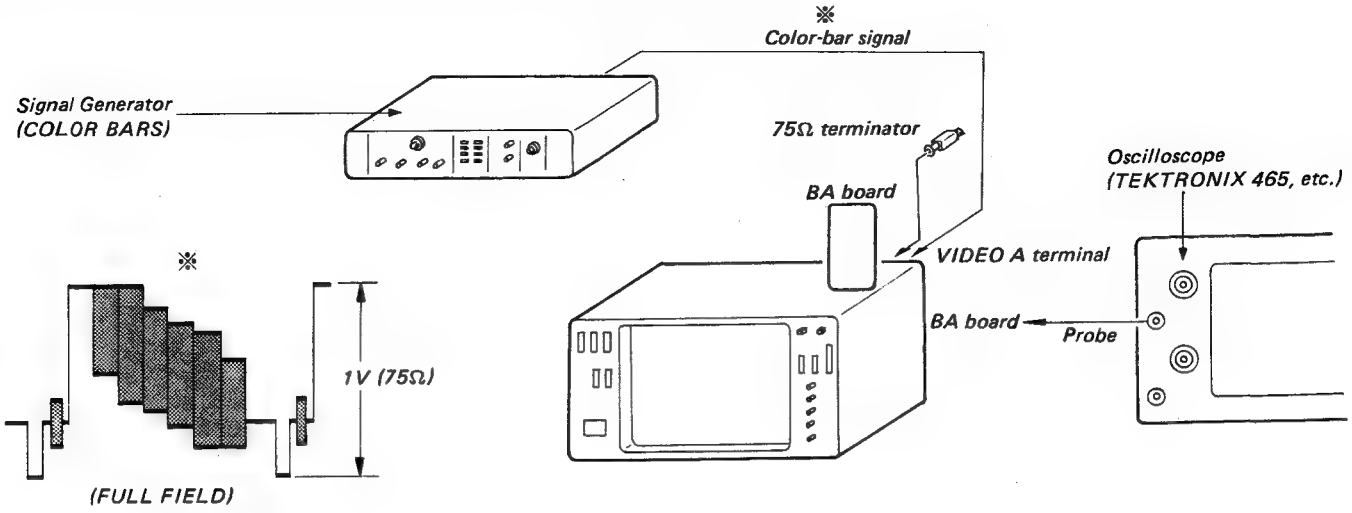


Fig. 5-80.

1. Complete the connections as shown in Fig. 5-80.
2. Turn on the power of this monitor. Set the INPUT switch to the A position, and the SYNC switch to the INT position.
3. Connect the oscilloscope probe to TP6 on the BA board.
4. Adjust L3 on the BA board so that the amplitude of the 4.43 MHz (PAL) or 3.58 MHz (PAL-M) waveform is maximum. (See Fig. 5-81.)
   At this time, the amplitude of the output waveform should be 1.2 ± 0.3 Vp-p.

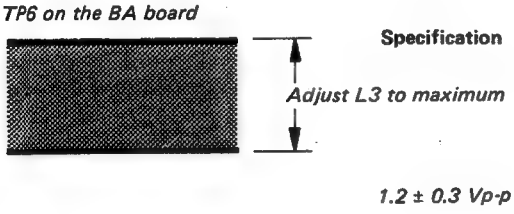


Fig. 5-81.

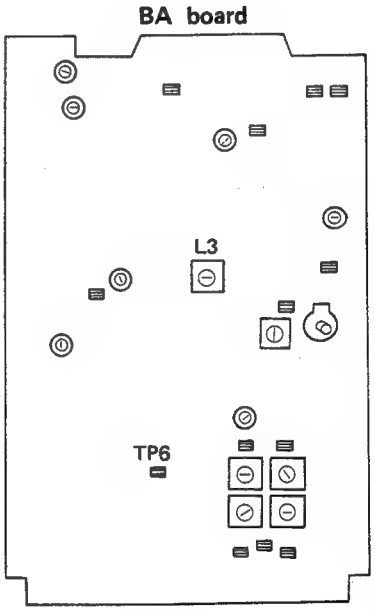


Fig. 5-82.

16. BA Board 4.43 MHz (PAL) or 3.58 MHz (PAL-M) Oscillator Free Run Adjustment

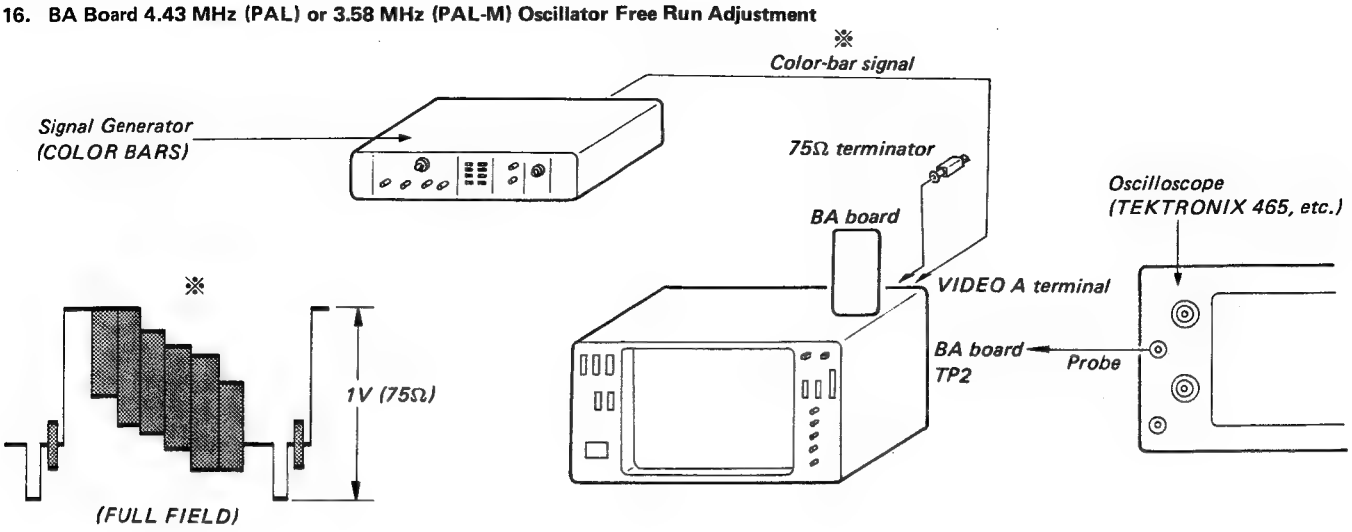


Fig. 5-83.

1. Complete the connections as shown in Fig. 5-83.
2. Connect TP3 on the BA board to TP4 ground.
3. Turn on the power of this monitor. Set the INPUT switch to the A position, and the SYNC switch to the INT position.
4. Connect the oscilloscope probe to TP2 on the BA board.
5. Adjust CV1 on the BA board so that the output waveform is shifted slowly. (See Fig. 5-84.)
6. Turn off the power of this monitor, and disconnect TP3 and TP4.

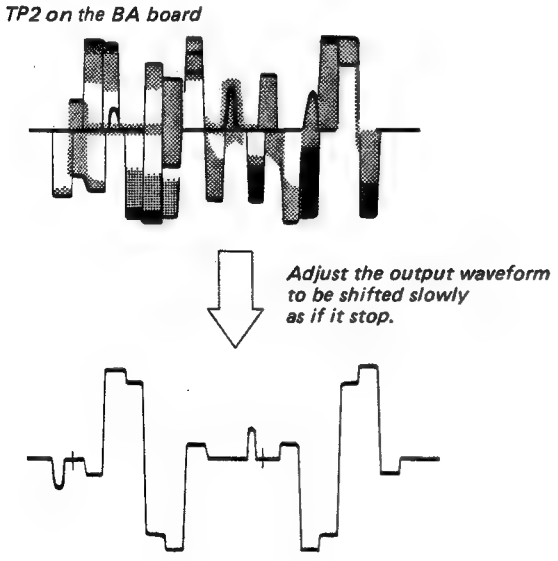


Fig. 5-84.

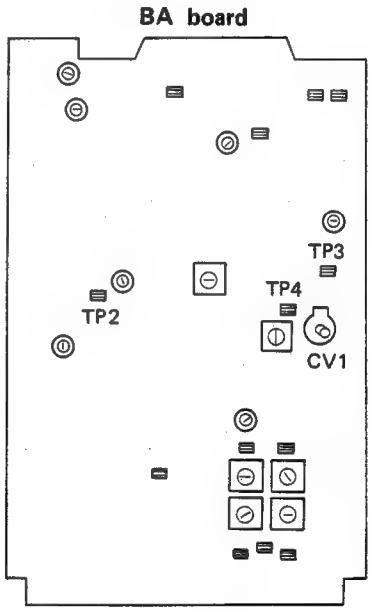


Fig. 5-85.

17. BA Board Chroma Level Adjustment

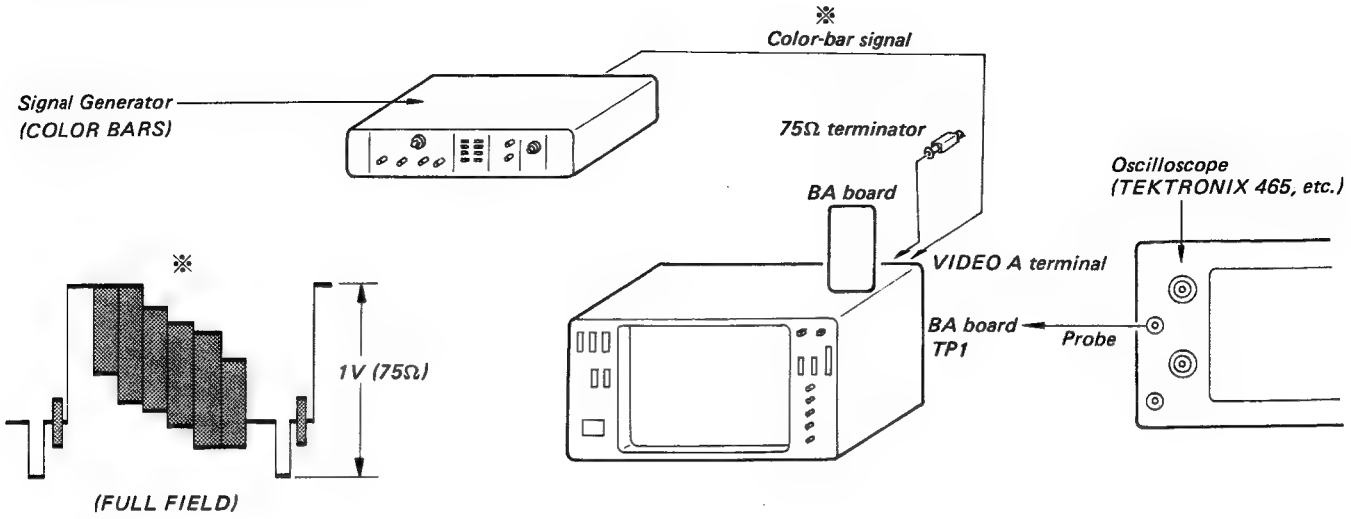


Fig. 5-86.

1. Complete the connections as shown in Fig. 5-86.
2. Turn on the power of this monitor. Set the INPUT switch to the A position, and the SYNC switch to the INT position.
3. Connect the oscilloscope probe to TP1 on the BA board.
4. Turn on the CHROMA PRESET control so that the output waveform is 0.2 Vp-p. (See Fig. 5-87.)

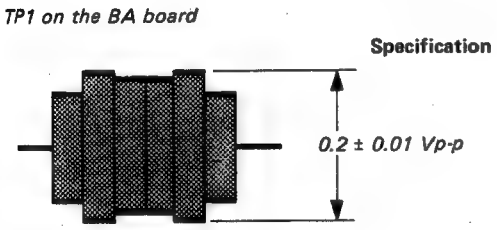


Fig. 5-87.

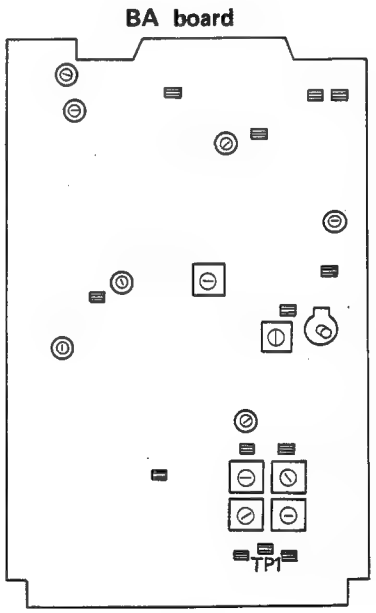


Fig. 5-88.

18. BA Board Color Difference Clamp Level Adjustment

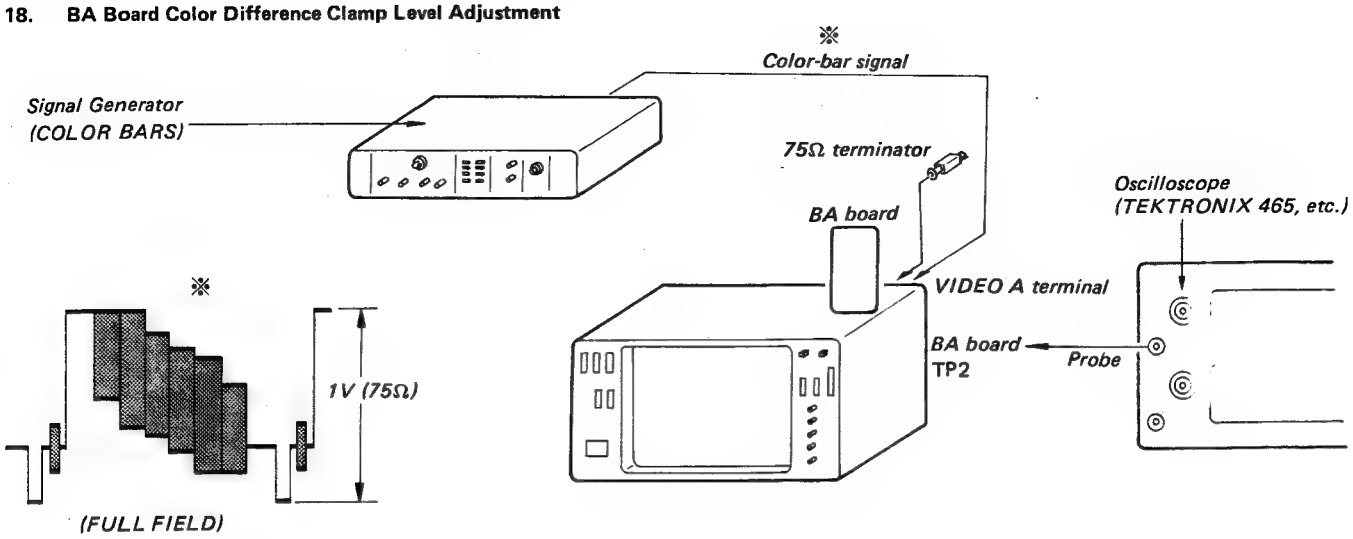
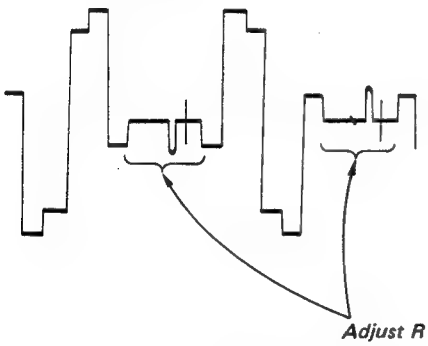


Fig. 5-89.

1. Complete the connections as shown in Fig. 5-89.
2. Turn on the power of this monitor. Set the INPUT switch to the A position, and the SYNC switch to the INT position.
3. Connect the oscilloscope probe to TP2 on the BA board.
4. Set the oscilloscope sensitivity to 50mV/DIV, and adjust RV1 on the BA board so that the DC level of the output waveform is 0Vdc. (See Fig. 5-90.)

TP2 on the BA board



Specification *0 ± 30 mV·DC*

Fig. 5-90.

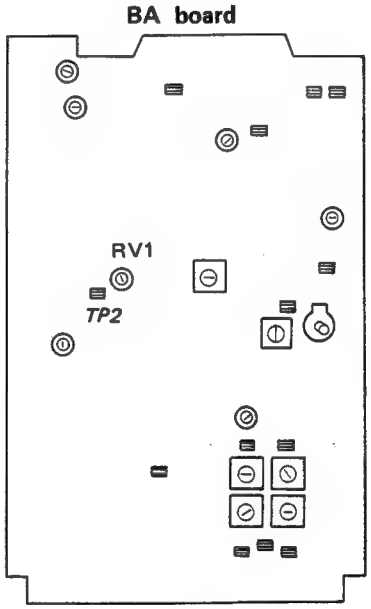


Fig. 5-91.

19. BA Board Color Difference Phase Adjustment

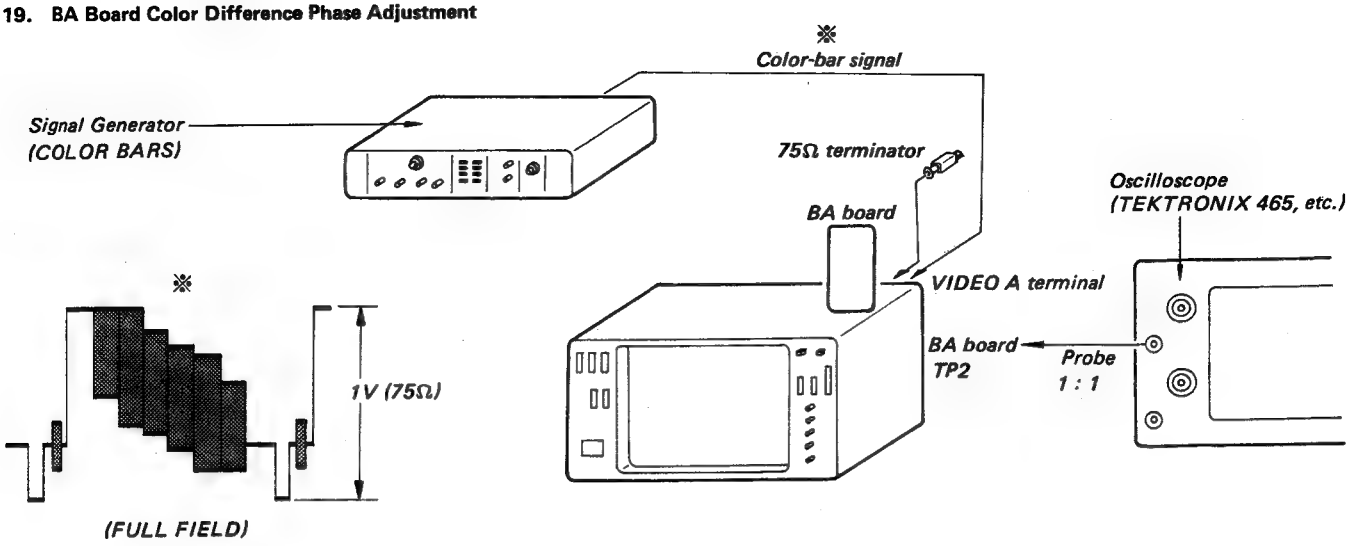


Fig. 5-92.

1. Complete the connections as shown in Fig. 5-92.
2. Turn on the power of this monitor. Set the INPUT switch to the A position, the SYNC switch to the INT position, and the PAL switch to the D position.

R-Y System Adjustment

3. Connect the oscilloscope probe to TP2 on the BA board, and turn off the V (R-Y) signal of the signal generator.
4. Set the oscilloscope sensitivity to 20mV/DIV, and adjust RV2 on the BA board so that the output waveform is flat. (See Fig. 5-93.)

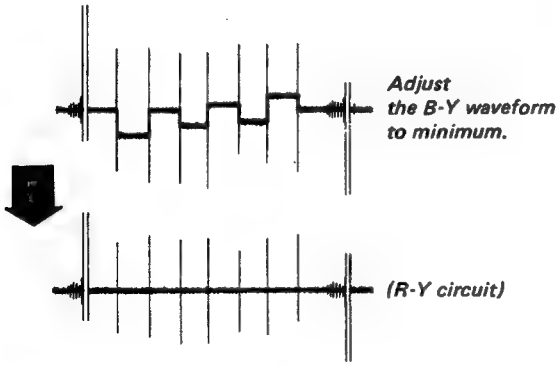


Fig. 5-93.

5. Connect the oscilloscope probe to TP13, and adjust T1 on the BA board so that the output waveform is flat.
6. Set the PAL switch to the S position, and turn the PHASE PRESET control so that the output waveform is flat.
7. Set the PAL switch to the D position, and make sure the waveform.

B-Y System Adjustment

8. Connect the oscilloscope probe to TP11. Turn on the V signal of the signal generator, and turn off the U (B-Y) signal. Then adjust RV3 on the BA board so that the output waveform is flat. (See Fig. 5-94.)

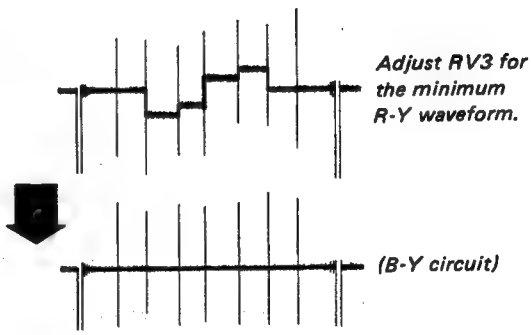


Fig. 5-94.

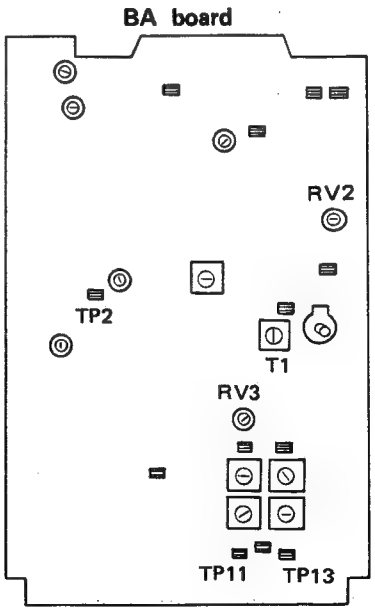


Fig. 5-95.

20. BA Board ID Collect Pulse Adjustment

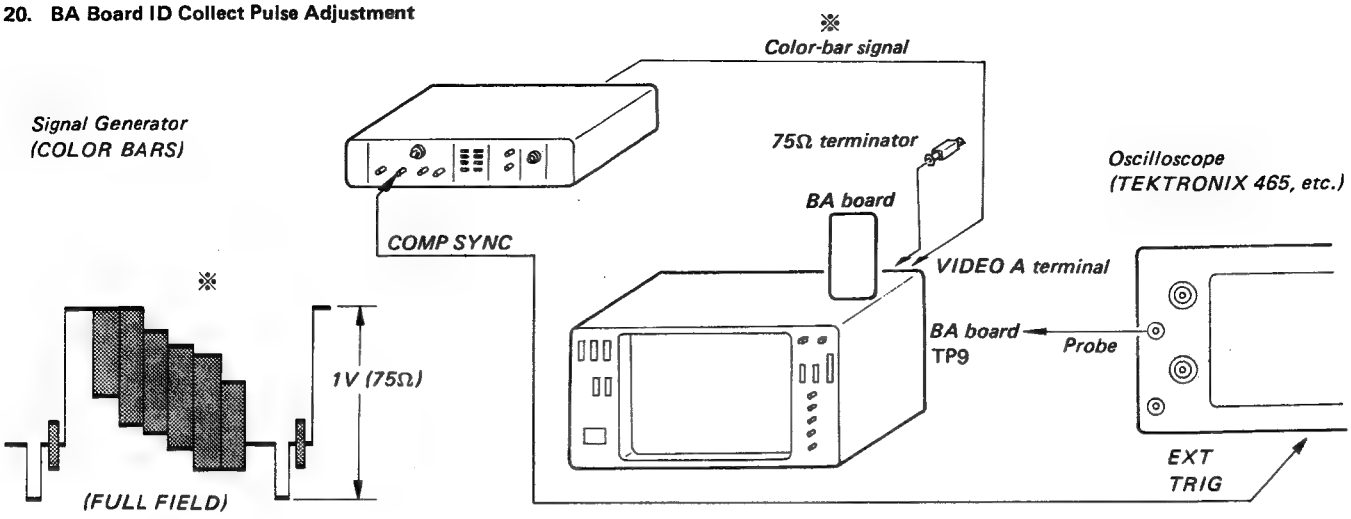
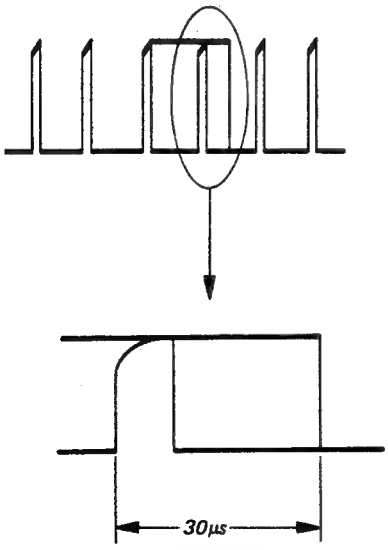


Fig. 5-96.

1. Complete the connections as shown in Fig. 5-96.
2. Connect TP7 (+5V) on the BA board to TP8 using a short-clip.
3. Turn on the power of this monitor. Set the INPUT switch to the A position, and the SYNC switch to the INT position.
4. Connect the oscilloscope probe to TP9 on the BA board. Set the oscilloscope TRIG SOURCE to EXT ÷ 10 position, and the A TRIGGER SLOPE to ⊕ position for synchronization.
5. Adjust RV4 on the BA board so that the output waveform is as shown in Fig. 5-97.
6. Turn off the power of this monitor, and remove the short-clip.

TP9 on the BA board



Specification *30 ± 1μs*

Fig. 5-97.

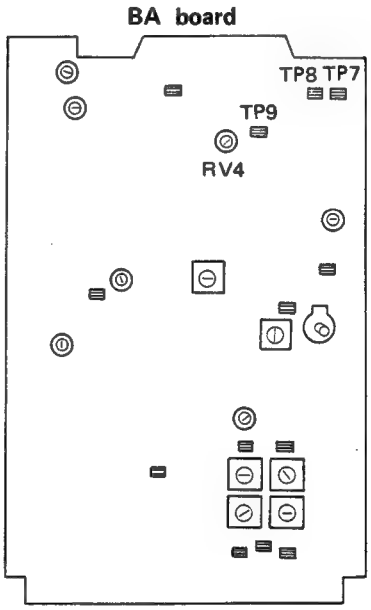


Fig. 5-98.

21. BA Board ID Adjustment

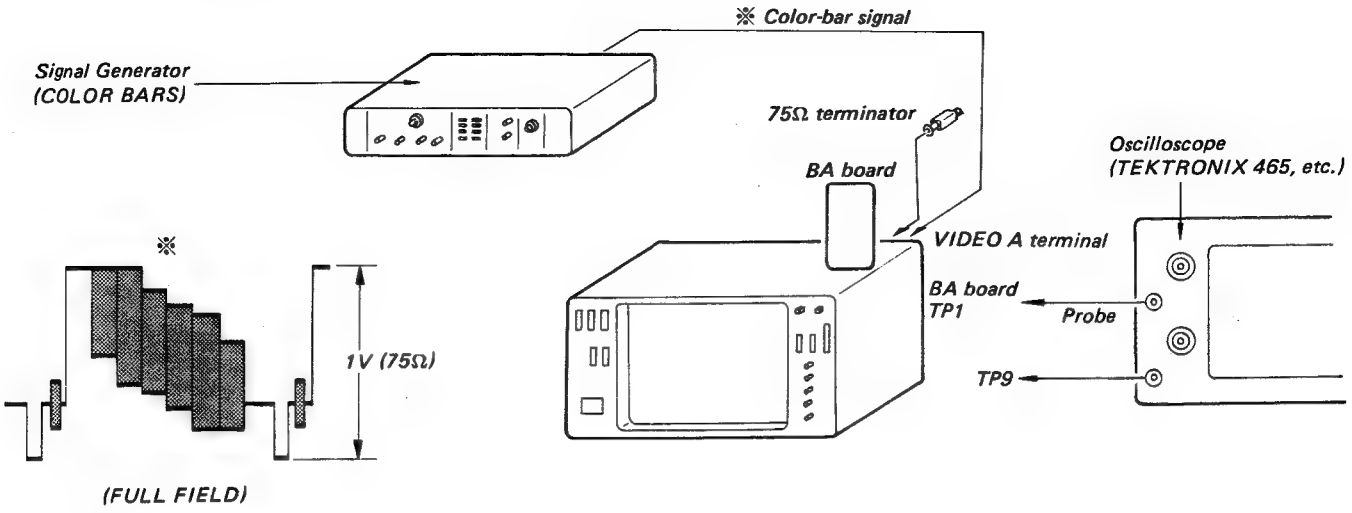


Fig. 5-99.

1. Complete the connections as shown in Fig. 5-99.
2. Turn on the power of this monitor. Set the INPUT switch to the A position, and the SYNC switch to the INT position.
3. Connect the oscilloscope probe CH1 to TP1 on the BA board, and the CH2 to TP9.
4. Set the oscilloscope TRIG SOURCE to CH2, and the A TRIGGER SLOPE to ⊕ for synchronization.
5. Adjust RV7 on the BA board so that the output waveform is as shown in Fig. 5-100.

Note: If linearity adjustment has been made after this adjustment, readjust it.

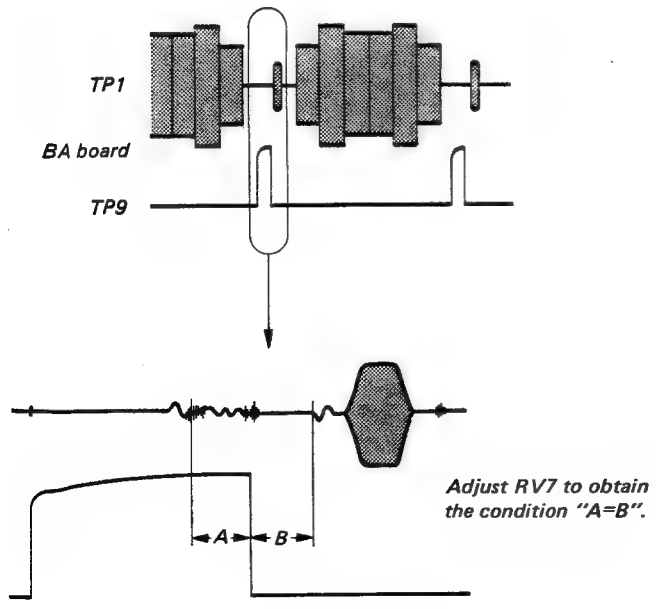


Fig. 5-100.

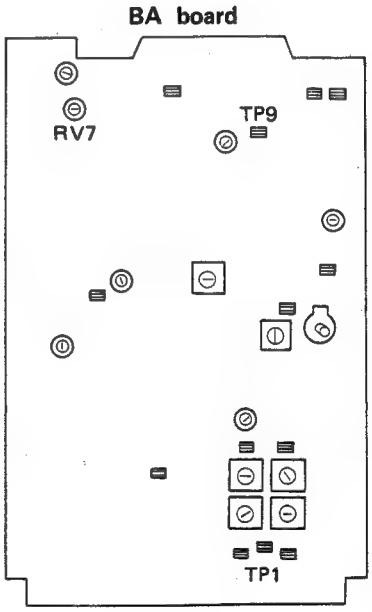


Fig. 5-101.

22. BA Board Burst Clamp Pulse Width Adjustment

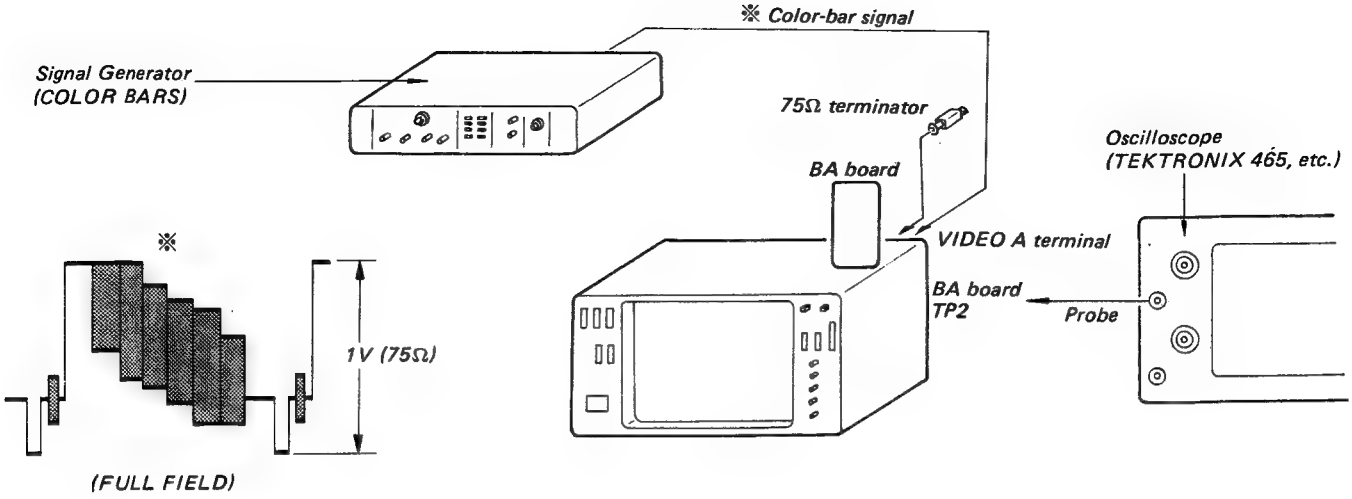
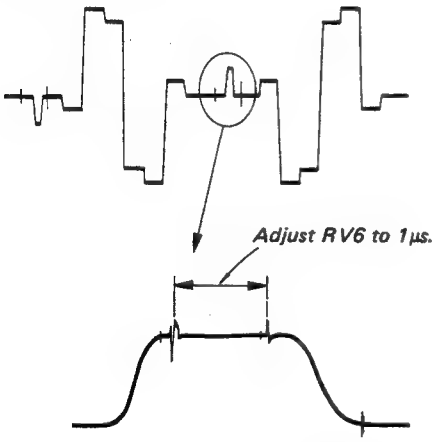


Fig. 5-102.

1. Complete the connections as shown in Fig. 5-102.
2. Turn on the power of this monitor. Set the INPUT switch to the A position, and the SYNC switch to the INT position.
3. Connect the oscilloscope probe to TP2 on the BA board.
4. Adjust RV6 on the BA board so that the burst clamp pulse width is 1μs. (See Fig. 5-103.)

TP2 on the BA board



Specification *1 ± 0.05μs*

Fig. 5-103.

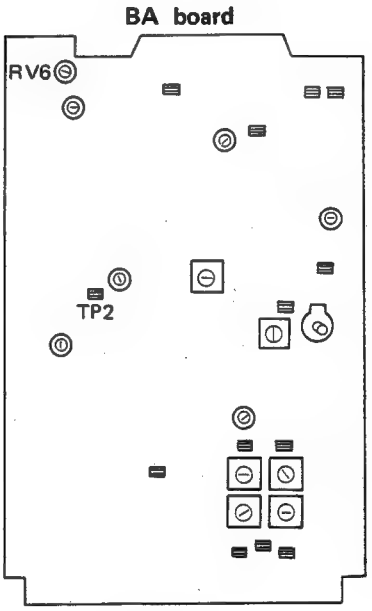


Fig. 5-104.

23. BB Board CCD (Charge Coupled Device) Bias Adjustment

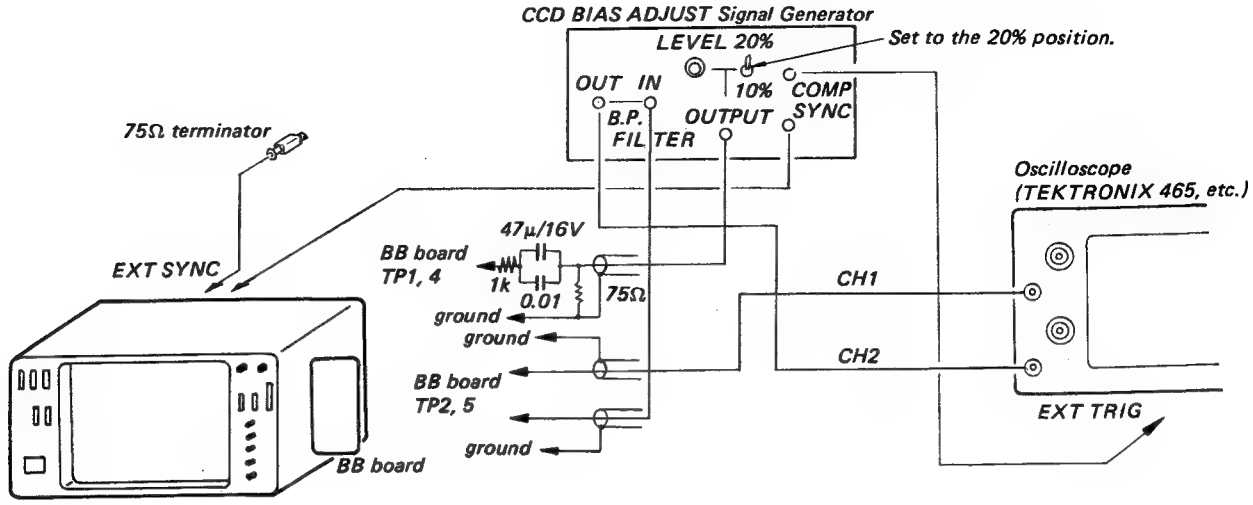


Fig. 5-105.

1. Complete the connections as shown in Fig. 5-105.
2. Set RV1 and RV3 on the BB board to mechanical mid-position.
3. Turn on the power of this monitor. Set the SYNC switch to the EXT position.
4. Connect the output of the signal generator to TP1 on the BB board via the capacitor and resistor, and connect the probe of oscilloscope to TP2 on BB board.
5. Set the signal generator to the 20% position, and adjust the output LEVEL knob so that the oscilloscope output waveform is 1V. (See Fig. 5-106)
6. Set the VERT MODE of the oscilloscope to CH2.
7. Turn the voltage knob and time axis knob on the oscilloscope properly so that the output waveform is 5 and 8.5 divisions of the scale in the vertical and horizontal directions. (See Fig. 5-107.)
8. Adjust RV2 on BB board so that the four corners shown by arrows have same curve, and confirm that A and B are more then 4 divisions as shown in Fig. 5-108.
9. Set the VERT MODE of the oscilloscope to CH1. (At this time set the voltage and time axis knobs to normal position.)
10. Adjust the LEVEL knob of the signal generator so that the oscilloscope output waveform in 250mV. (See Fig. 5-109.)
11. Set the VERT MODE of the oscilloscope to CH2.
12. Turn the voltage knob and time axis knob on the oscilloscope properly so that the output waveform is 5 and 8.5 divisions of the scale in the vertical and horizontal directions as same as step 7. (See Fig. 5-107.)
13. Confirm that the waveform gain of 7 divisions from the last limb is 4.8 division or more. (Differential gain should be 3% or less. See Fig. 5-110.)
14. Connect the cable, which has been connected to TP1 on the BB board, to TP4, and connect TP5 to the oscilloscope and signal generator input.
15. Adjust the oscilloscope output waveform to be 1V in the same way as that in step 5.
16. Adjust RV4 on the BB board in the same way at that in each step through 13.

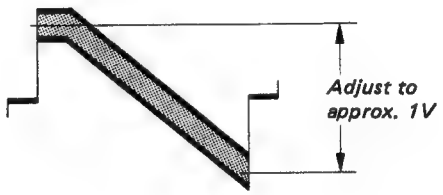


Fig. 5-106.

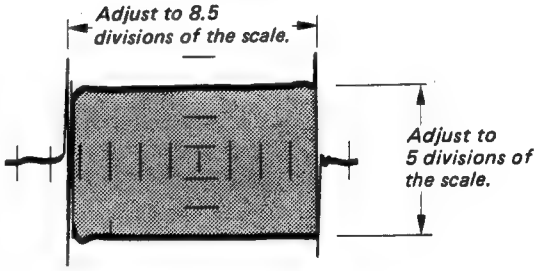


Fig. 5-107.

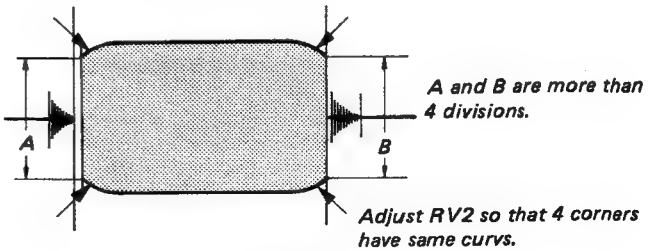
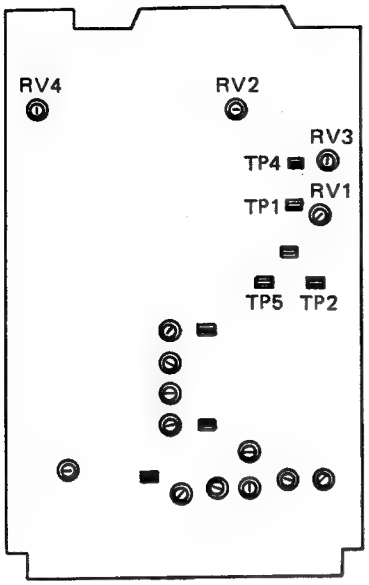


Fig. 5-108.

BB Board



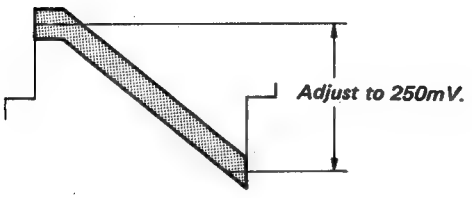
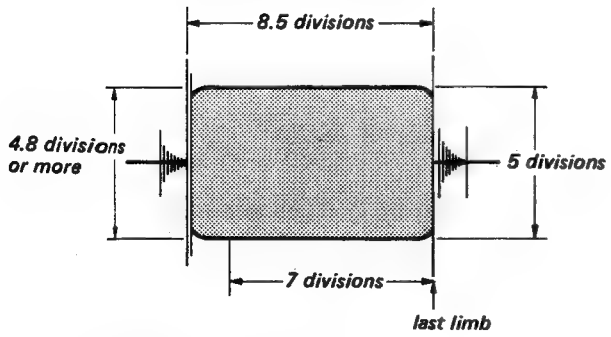


Fig. 5-109.



Specification: *DG 3% or less*

$$\left(\text{example of above figure}\quad DG = \frac{5-4.8}{5+4.8} \times 100 \fallingdotseq 2\%\right)$$

Fig. 5-110.

24. BB Board PAL-D Gain Adjustment

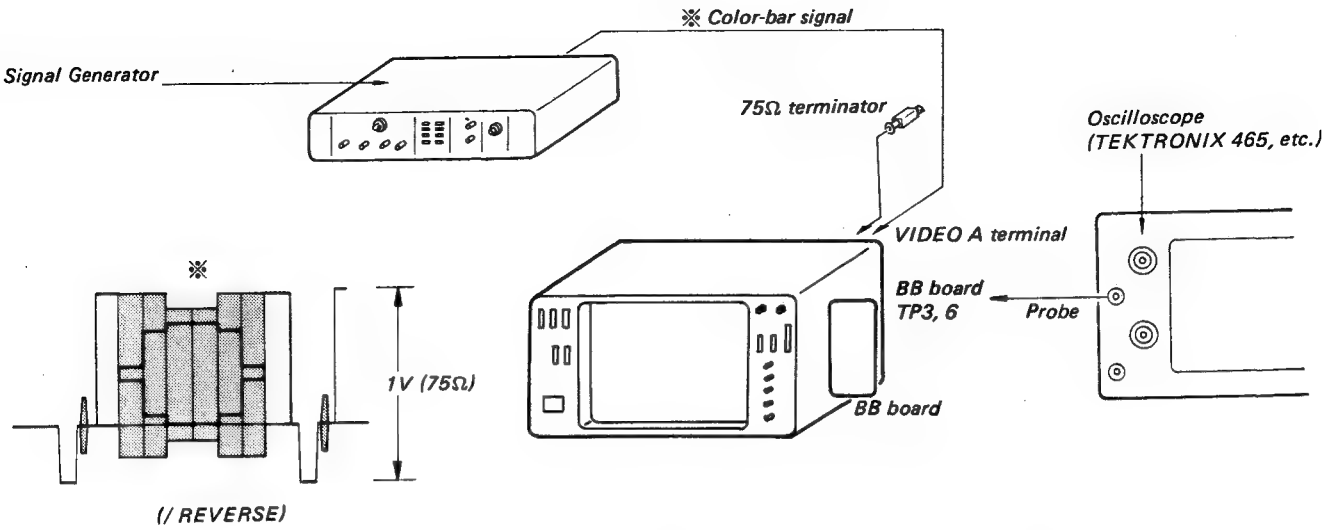
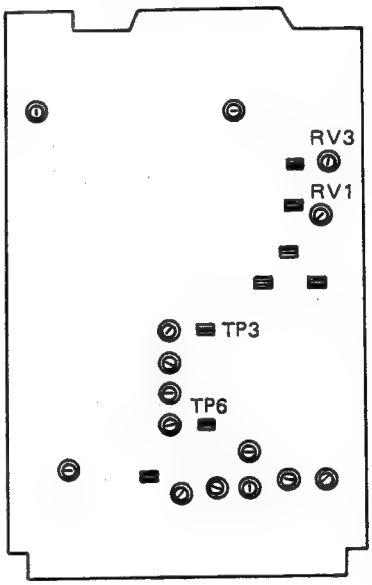


Fig. 5-111

1. Complete the connections as shown in Fig. 5-111. Turn on the power of this monitor. Set the INPUT switch to the A position, and the SYNC switch to the INT position.
2. Connect the oscilloscope probe to TP3 on the BB board.
3. Set the oscilloscope sensitivity to 0.2V/DIV, and adjust RV1 on the BB board so that the area designated in Fig. 5-112 is flat.
4. Connect the oscilloscope probe to TP6, and adjust RV3 on the BB board so that the area designated in Fig. 5-113 is flat.

BB Board



TP3 on the BB board

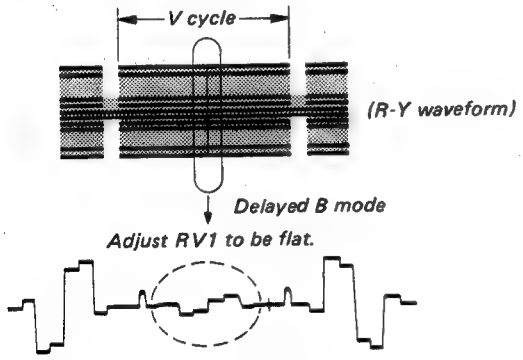


Fig. 5-112.

TP6 on the BB board

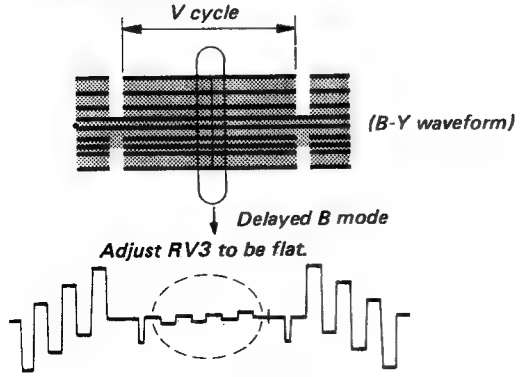


Fig. 5-113.

25. BB Board Color Difference Level Adjustment

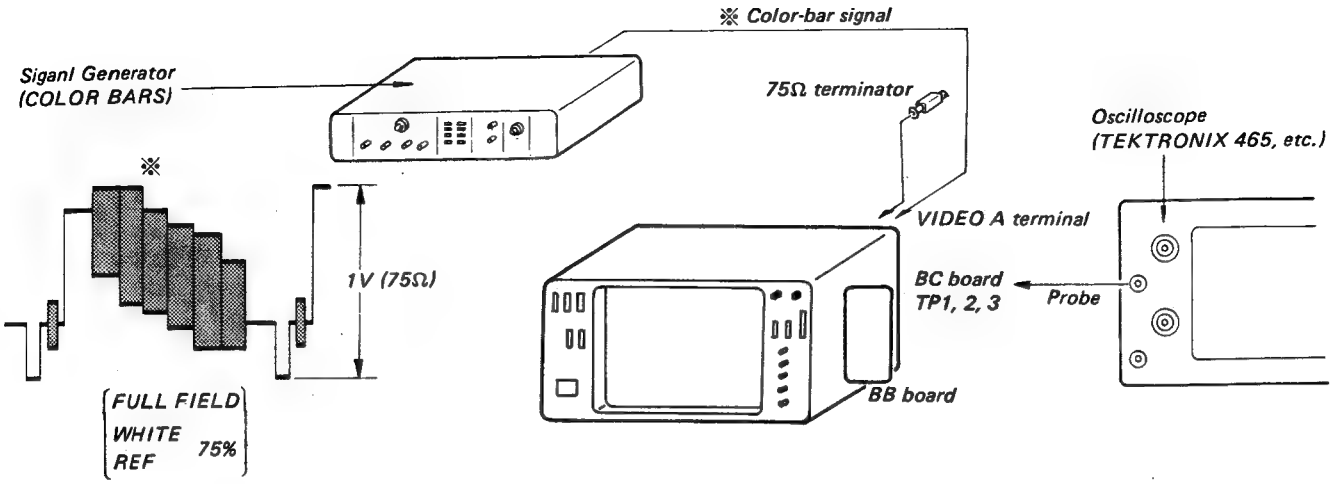


Fig. 5-114.

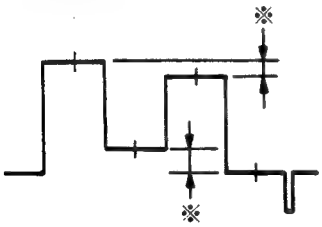
1. Complete the connections as shown in Fig. 5-114.
2. Turn on the power of this monitor. Set the INPUT switch to the A position, and the SYNC switch to the INT position.

PAL-D

R-Y Level Adjustment

3. Set the PAL switch to the D position.
4. Connect the oscilloscope probe to TP1 on the BC board, and adjust RV11 on the BB board to obtain the correct R-Y waveform as shown in Fig. 5-115.

*(TP1 on the BC board
R. OUT waveform)*



(Adjust the levels indicated with ※ to the same respectively using RV11 on the BB board.)

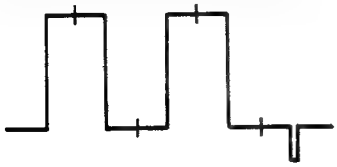
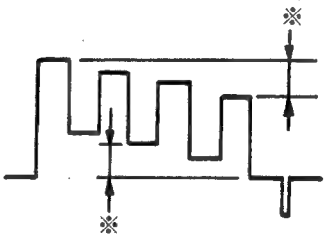


Fig. 5-115.

B-Y Level Adjustment

5. Connect the oscilloscope probe to TP3 on the BC board, and adjust RV7 on the BB board to obtain the correct B-Y waveform as shown in Fig. 5-116.

*(TP3 on the BC board
B. OUT waveform)*



(Adjust the levels indicated with ※ to the same respectively using RV7 on the BB board.)

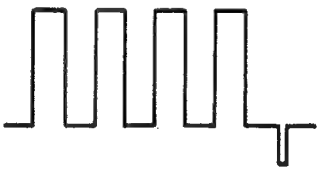
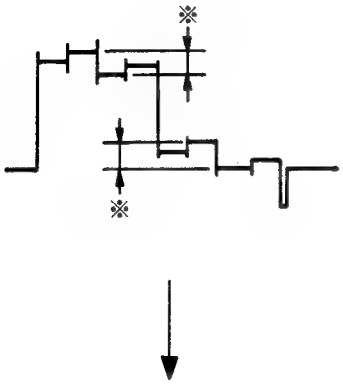


Fig. 5-116.

G-Y Level Adjustment

6. Connect the oscilloscope probe to TP2 on the BC board, and adjust RV13 and 14 on the BB board to obtain the correct G-Y waveform as shown in Fig. 5-117.

(TP3 on the BG board / G. OUT waveform)



(Adjust the levels indicated with ※ to the same respectively using RV13 and RV14 on the BB board.)

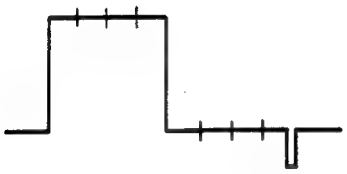
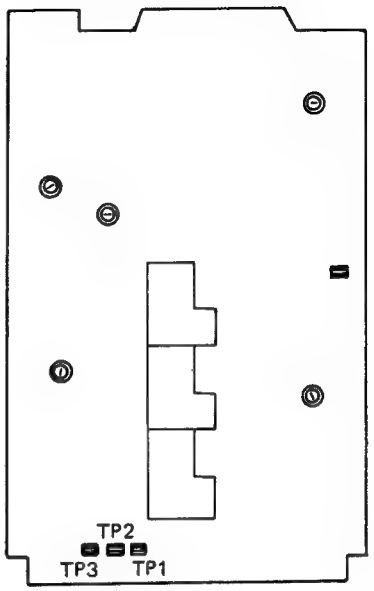


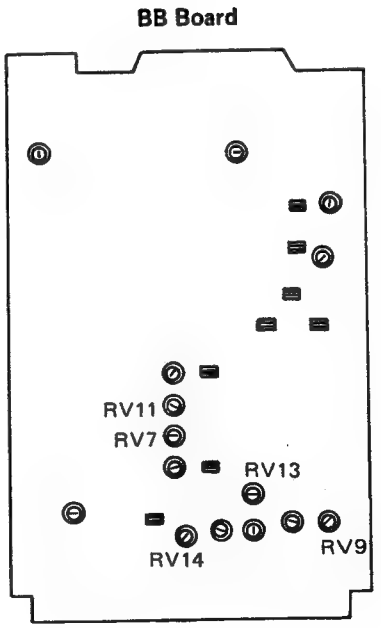
Fig. 5-117



PAL-S

7. Set the PAL switch to the S-position.
8. Connect the oscilloscope probe to TP1 on the BC board, and adjust the R-Y level using RV9 on the BB board in the same way as for PAL-D level adjustment.
9. Connect the oscilloscope probe to TP3 on the BC board, and adjust the B-Y level using RV7 on the BB board in the same way as for PAL-D level adjustment.

Note: Set the oscilloscope time axis knob to 0.1ms/DIV, and perform every adjustment accuratly.



26. BB Board Vector Output Adjustment

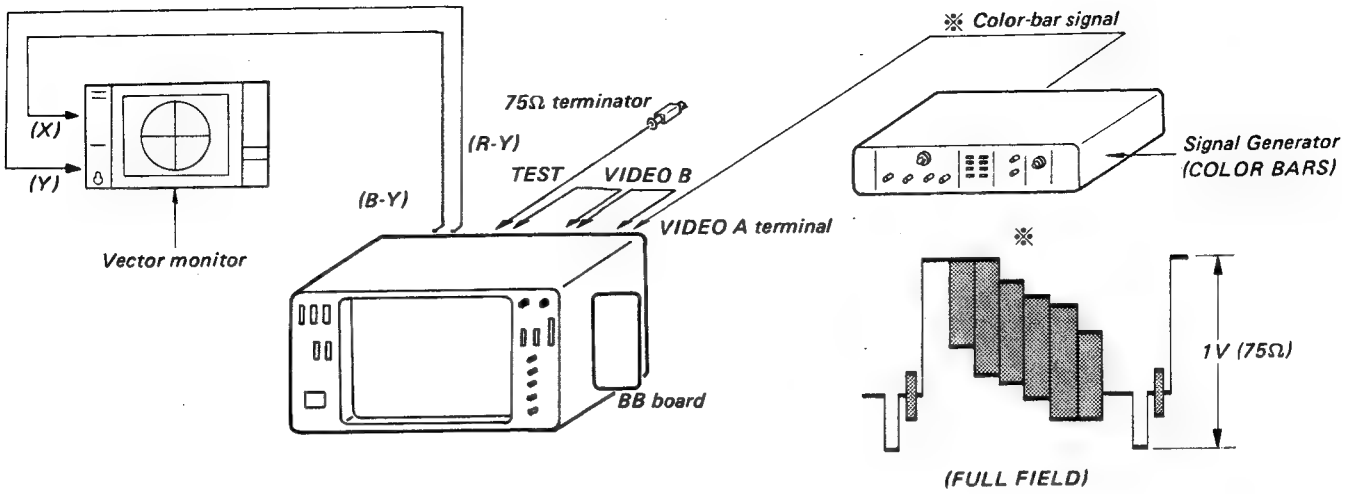


Fig. 5-118.

1. Complete the connections as shown in Fig. 5-118.
2. Turn on the power of this monitor. Set the INPUT switch to the A position, the SYNC switch to the INT position, and the PAL switch to the D position.
3. Adjust RV8 (B-Y) and RV12 (R-Y) on the BB board so that the areas (6) indicated with arrows in Fig. 5-119 enter its center as far as possible.
4. Set the INPUT switch to the B and TEST positions, and make sure each of them is within its specification.
5. Make sure both color phase and level do not change when turning the PHASE control from the minimum to the maximum. (Observe the vector monitor.)
6. Set the PAL switch to the S position.
7. Make sure the color phase changes by ±10° or more when turning the PHASE control from the minimum to the maximum. (Observe the vector monitor.)
8. Make sure the vector output does not change when changing the PAL switch set position from D to S and vice versa. (Click the PHASE control.)

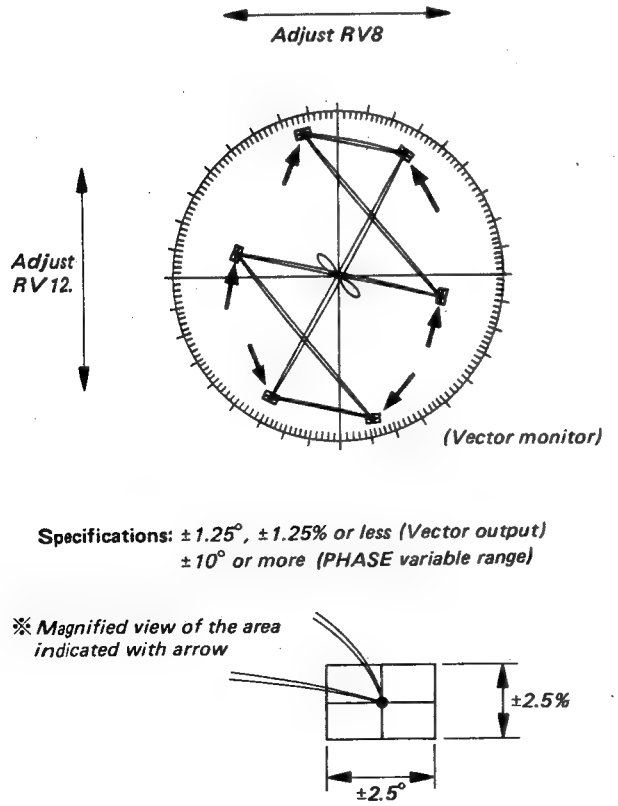
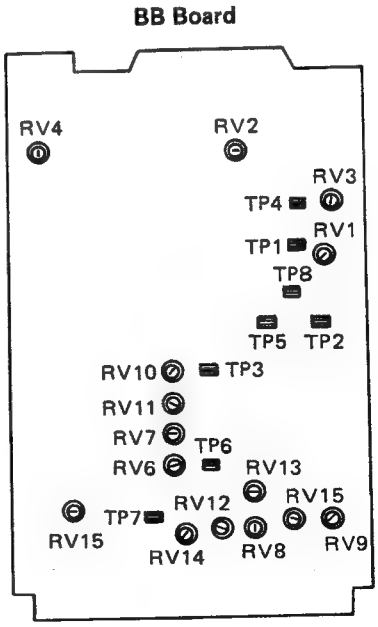


Fig. 5-119.



27. BC Board Color Difference Clamp Pulse Adjustment

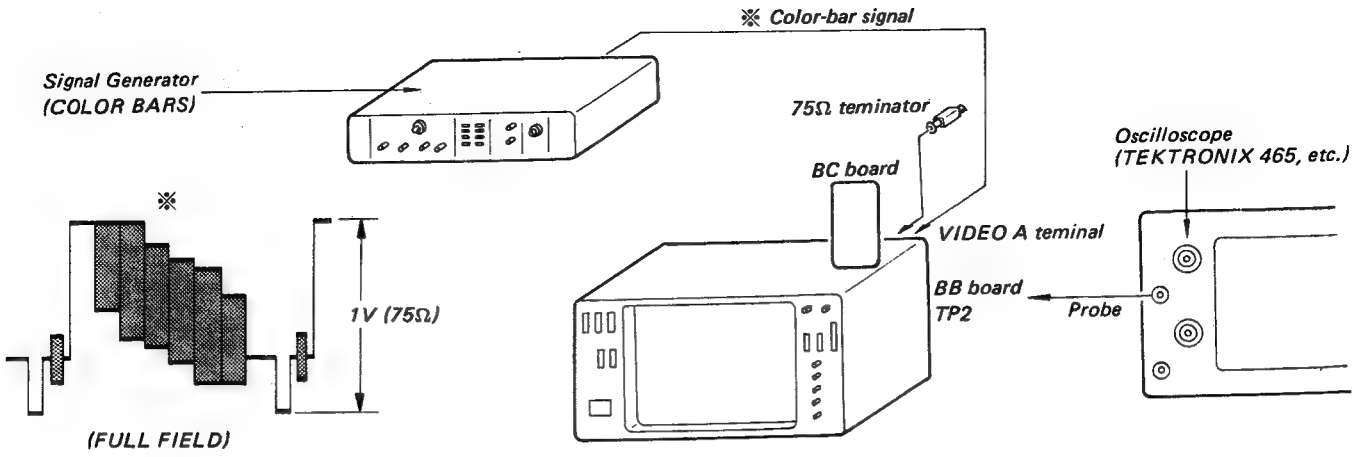


Fig. 5-122A.

1. Complete the connections as shown in Fig. 5-122A.
2. Turn on the power of this monitor. Set the INPUT switch to the A position, and the SYNC switch to the INT.
3. Connect the oscilloscope probe to TP2 on the BB board.
4. Adjust the color difference clamp pulse phase using RV5 on the BC board, and adjust the pulse width using RV6. (See Fig. 5-122B.)

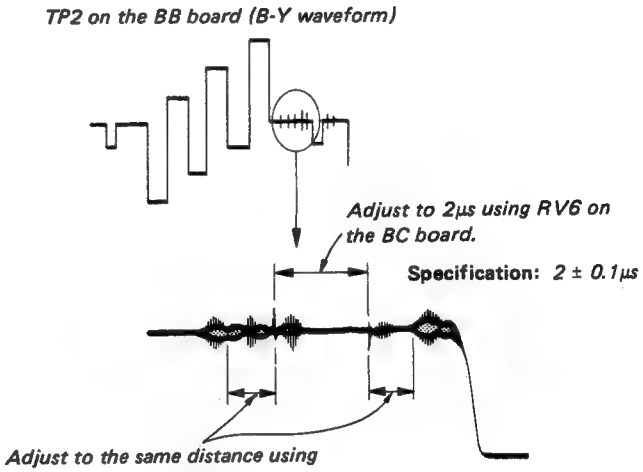


Fig. 5-122B

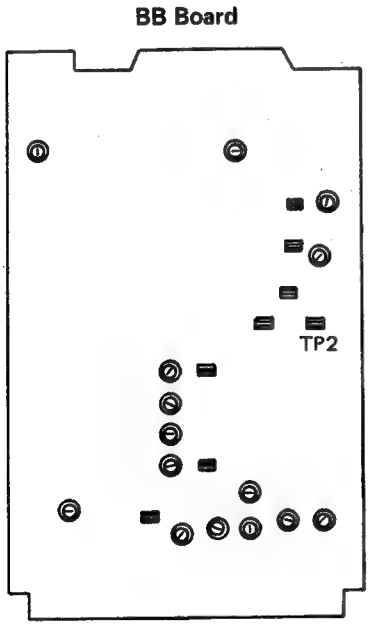


Fig. 5-123.

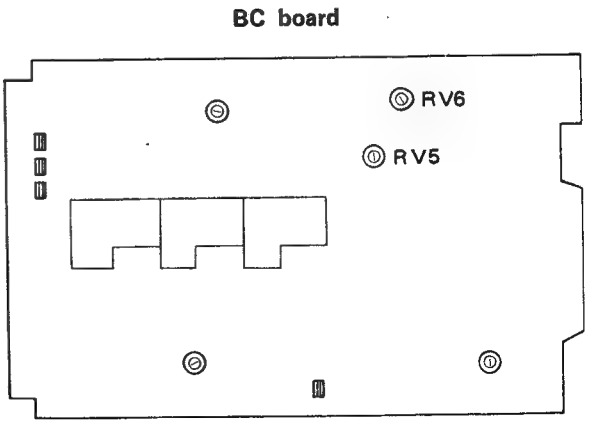


Fig. 5-124.

28. Bright and White Clamp Pulses Adjustment

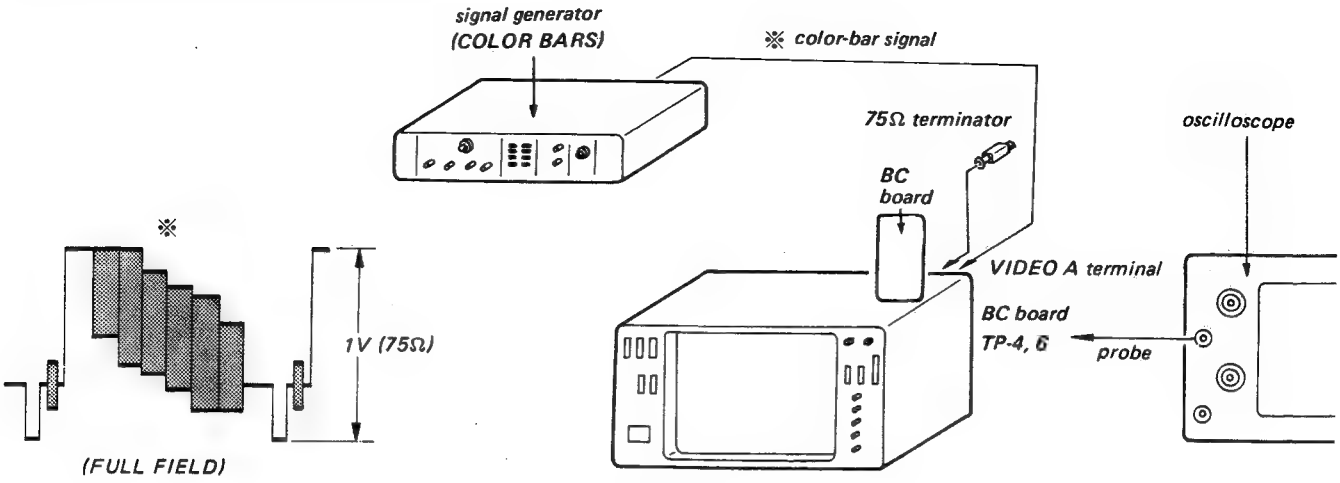


Fig. 5-125.

1. Complete the connections as shown in Fig. 5-125.
2. Turn on the power of this monitor. Set the INPUT switch to A and the SYNC switch to INT.
3. Connect the probe to TP4 on the BC board and adjust RV3 for a BRT CLAMP PULSE width of 3.3μs. Check that the pulse voltage is 7.5 ± 0.5 Vp-p. (See Fig. 5-126.)
4. Connect the probe to TP6 on the BC board, adjust RV4 for a WHITE CLAMP PULSE width of 3.3μs, and check that the pulse voltage is 7.5 ± 0.5 Vp-p. (See Fig. 5-126.)

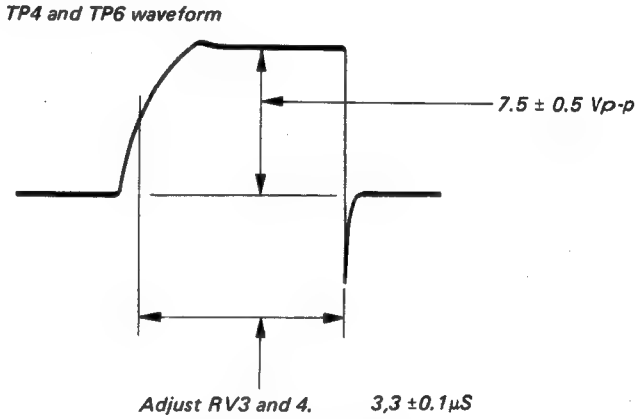


Fig. 5-126.

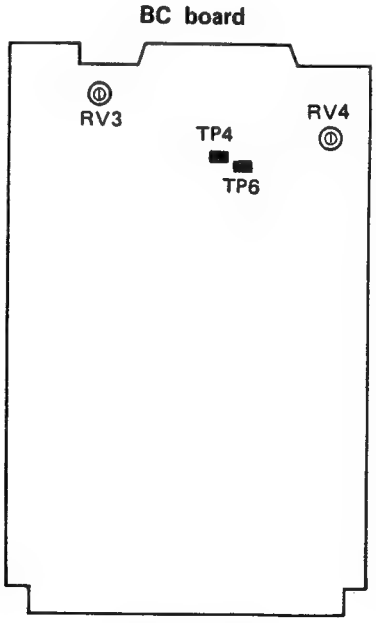


Fig. 5-127.

29. BC Board SET UP Adjustment

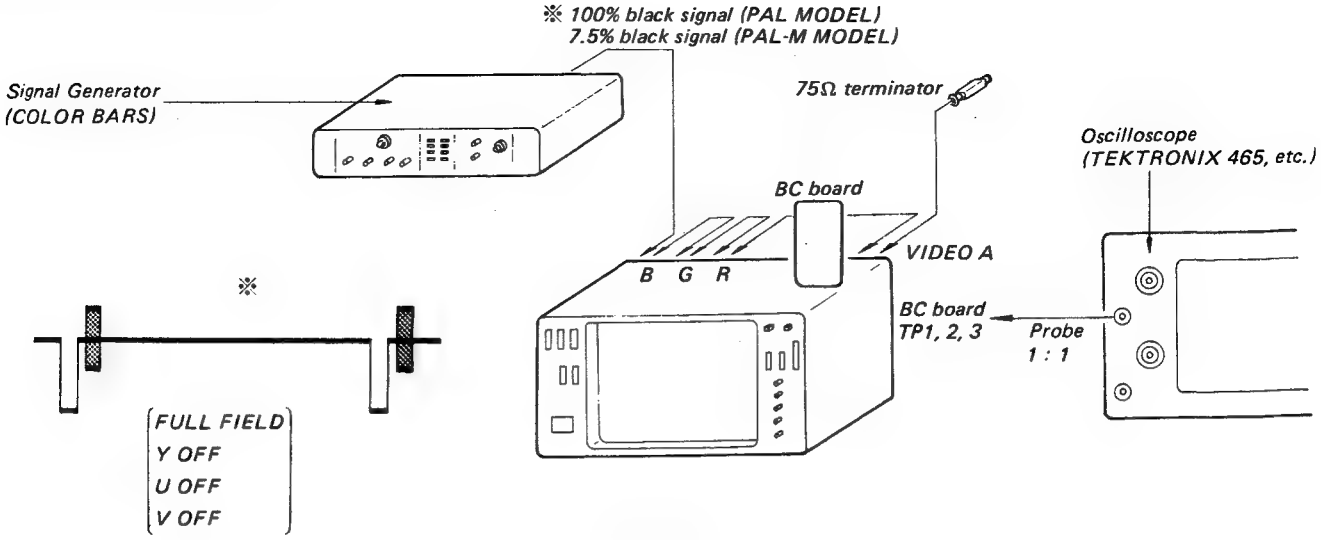
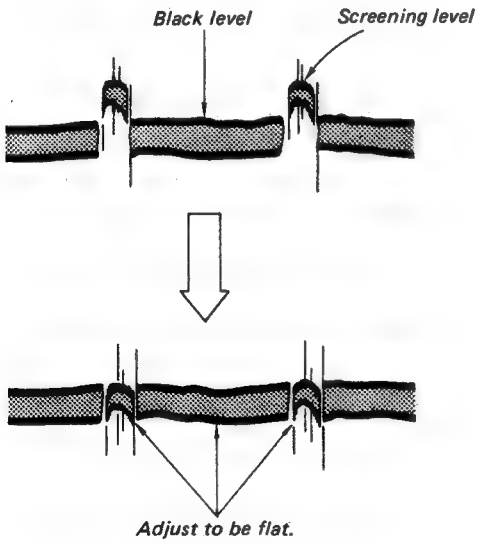


Fig. 5-128.

1. Complete the connections as shown in Fig. 5-128.
2. Turn on the power of this monitor. Set the INPUT switch to the RGB position, the SYNC switch to the INT position, and the MODE switch to the B/W position.
3. Connect the oscilloscope probe (1:1) to TP2 on the BC board, and set the oscilloscope sensitivity to 10 mV/DIV.
4. Adjust RV2 on the BC board so that the black level and the screening level is flat. (See Fig. 5-129.)



5. Set the INPUT switch to the A position, and adjust RV1 on the BC board in the same way.
6. Set the MODE switch to the AUTO position, and adjust RV15 on BB board to the same level as that in B/W mode. After adjustment, make sure the screening level by setting the MODE switch to the B/W position.
7. Connect the oscilloscope probe to TP1 on the BC board, and adjust RV10 on the BB board in the same way as that in step 6.
8. Connect the oscilloscope probe to TP3 on the BC board, and adjust the RV6 on the BB board in the same way as that in step 6.

SUB BRIGHTNESS Control Adjustment

8. Connect the probe to TP8 on the BC board, and set the oscilloscope sensitivity to 0.5V/DIV.
9. Make sure the brightness pulse (TP8) is ±1.4 Vp-p or more when turning the BRIGHTNESS control from the minimum to the maximum. (See Fig. 5-130.)

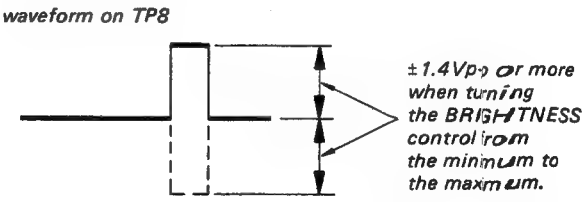


Fig. 5-130.

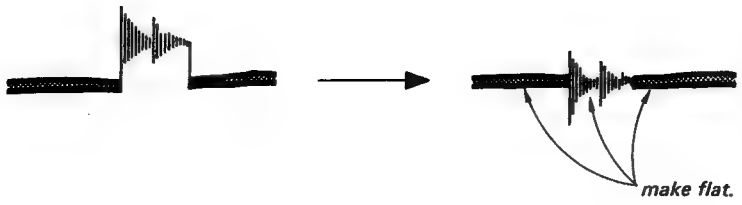


Fig. 5-131.

10. Make sure the brightness pulse is ±0.7V or more when clicking the BRIGHTNESS control (turning fully counterclockwise), and turning the BRIGHTNESS PRESET control from the minimum to the maximum.
11. Set the oscilloscope sensitivity to 5mV/DIV.
12. Turn the BRIGHTNESS PRESET control so that TP8 waveform is flat.
    At this time, the BRIGHTNESS PRESET control should be almost set at its mechanical center. (See Fig. 5-131.)

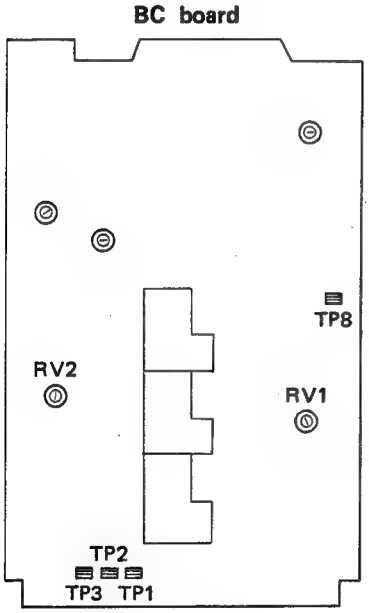


Fig. 5-132.

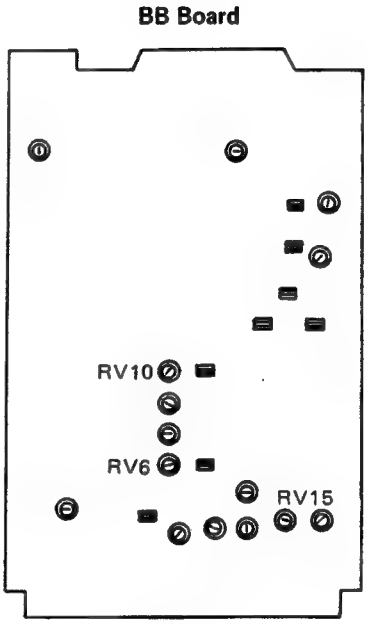


Fig. 5-133.

30. BC Board Contrast Level Adjustment

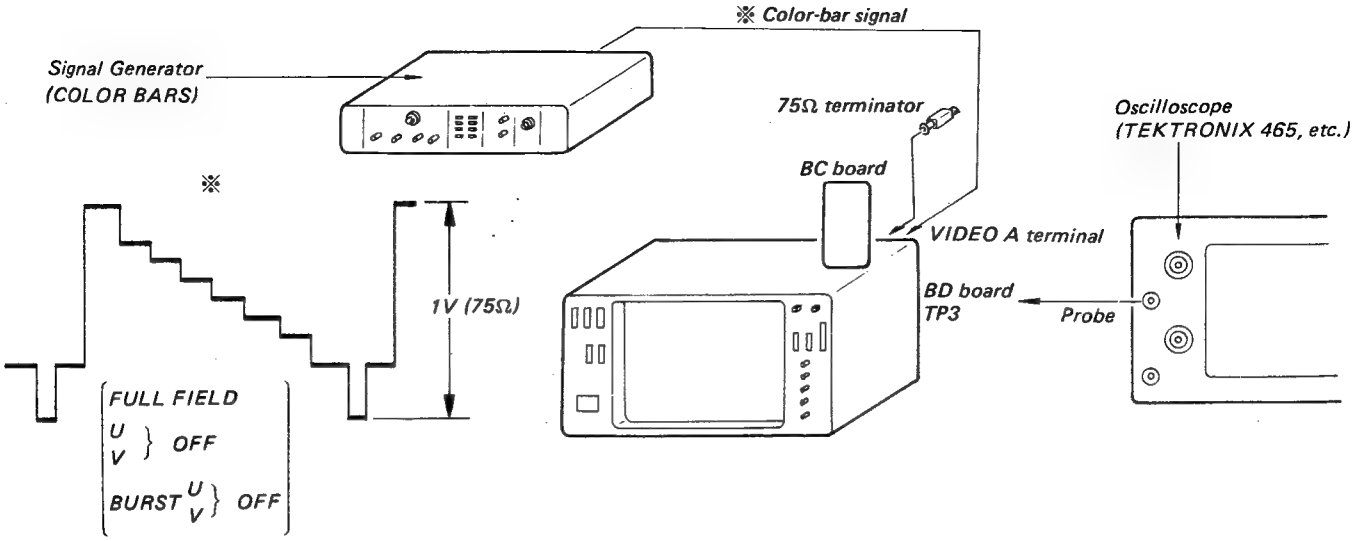


Fig. 5-134.

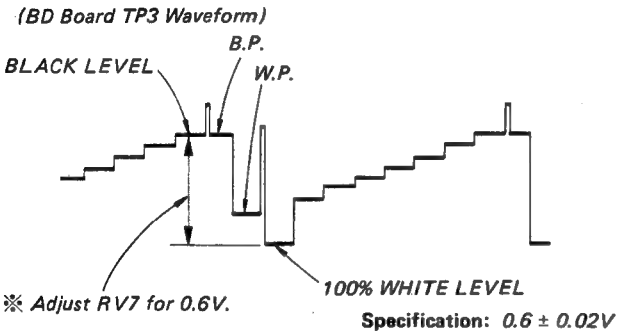


Fig. 5-135.

1. Complet the connections as shown in Fig. 5-134.
2. Turn on the power of this monitor. Set the INPUT switch to the A position, and the SYNC switch to the INT position.
3. Connect the probe to TP3 on the BD board, and click both CONTRAST and BRIGHTNESS controls (turn them fully counterclockwise).
4. Make sure the variable range (on the oscilloscope waveform) is normal by turning the CONTRAST PRESET control from the minimum to the maximum. After that, the control should be set at its mechanical center.
5. Adjust RV7 on the BC board so that both the black level and 100% white level may be 0.6V respectively. (See Fig. 5-135.)

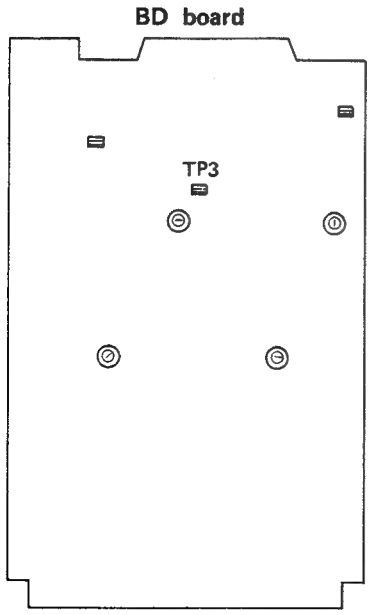


Fig. 5-136.

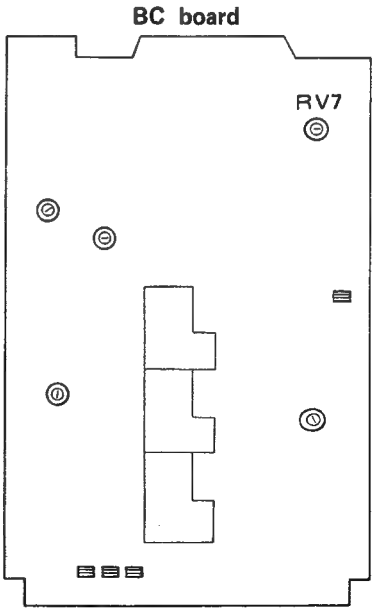


Fig. 5-137.

31. BD Board Adjustment

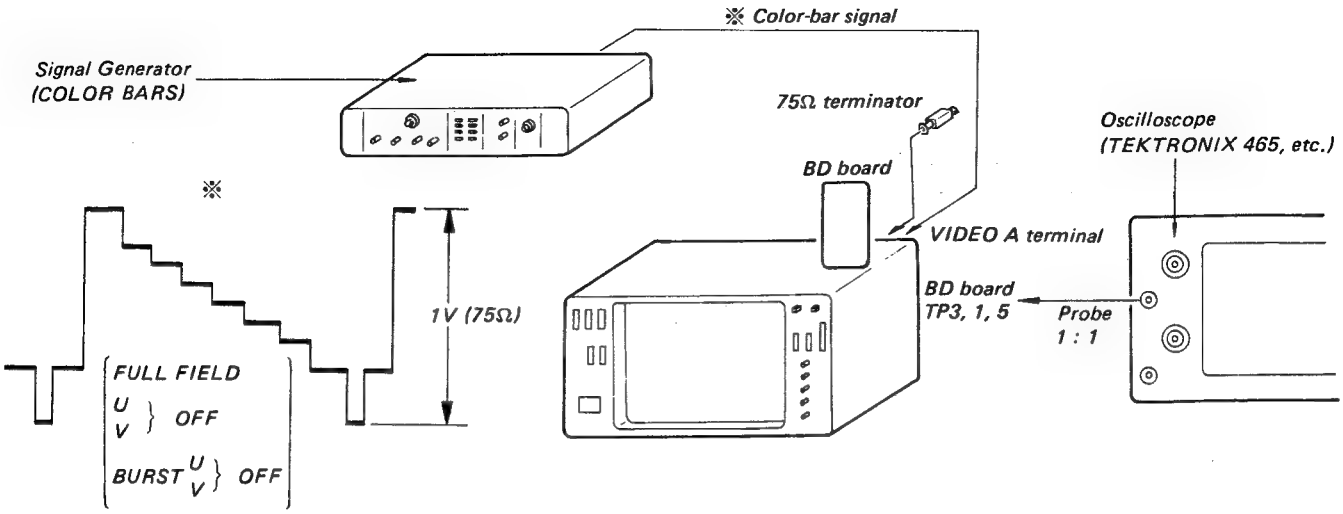


Fig. 5-138.

Brightness Pulse Level Adjustment

1. Complete the connections as shown in Fig. 5-138.
2. Turn on the power of this monitor. Set the INPUT switch to the A position, and the SYNC switch to the INT position.
3. Connect the oscilloscope probe (1:1) to TP3 on the BD board.
4. Set the BRIGHTNESS control to the minimum (just before it clicks), and turn the CONTRAST control so that the brightness pulse level coincides with the 100% white level. (See Fig. 5-139.)
   Adjust them accurately by setting the oscilloscope sensitivity to 10mV/DIV.
5. Connect the probe to TP1, and adjust RV1 to obtain the same condition as that in step 4.
6. Connect the probe to TP5, and adjust RV2 to obtain the same condition as that in step 4.
7. Connect the probe to TP3, and make sure the adjustment.

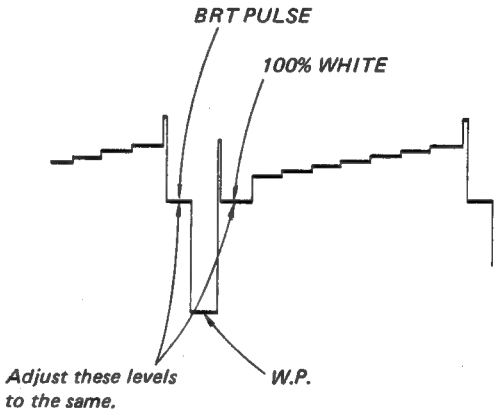


Fig. 5-139

White Peak Limiter Adjustment

8. Connect the probe to TP3. Preset the BRIGHTNESS control, and disconnect the 75Ω terminator.
   Turn the CONTRAST control so that the 100% white level coincides with the next white level. (See Fig. 5-140.)
9. Connect the probe also to TP1, and adjust RV3 so that the waveform is exactly equal to TP3 waveform. (Overlapping of two phenomena)
10. Disconnect the probe from TP1, and connect it to TP5. Adjust RV4 in the same way as that in step 9.

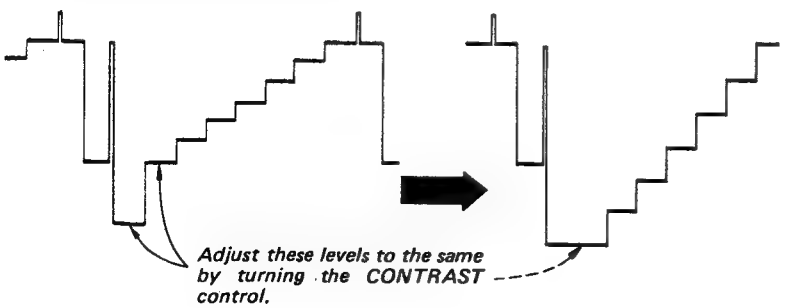


Fig. 5-140.

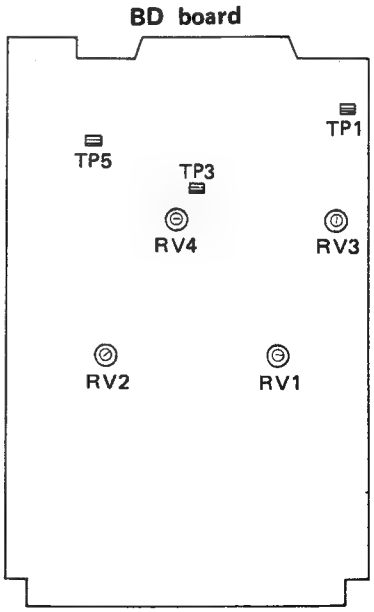


Fig. 5-141.

32. V Board Adjustment

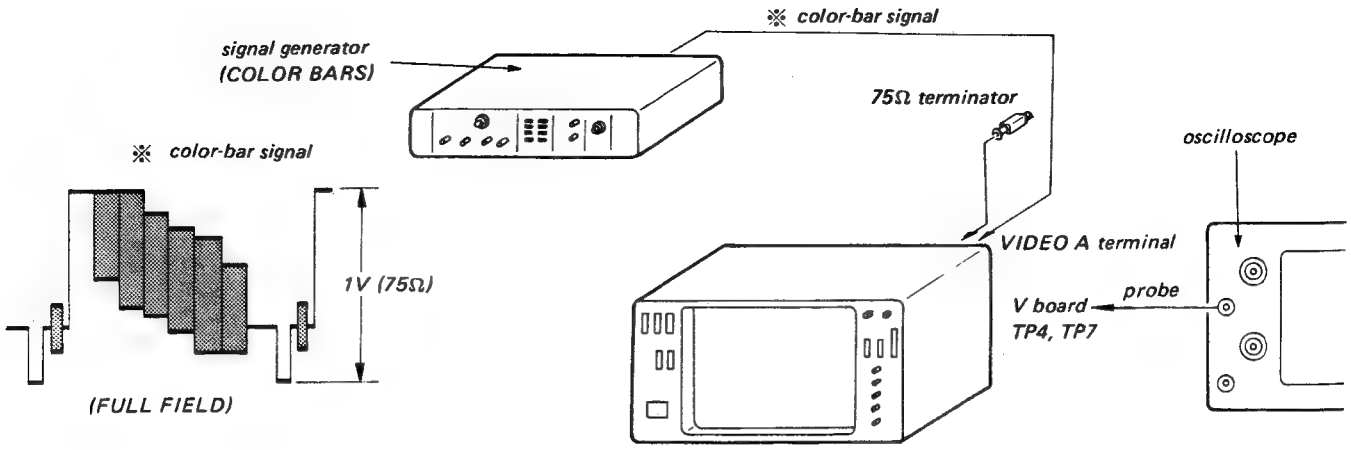


Fig. 5-142.

H. SYNC Pulse Width Adjustment

1. Complete the connections as shown in Fig. 5-142.
2. Turn on the power of this monitor. Set the INPUT switch to A and the SYNC switch to INT.
3. Connect the oscilloscope probe to TP4 board on the V board.
4. Adjust RV2 for a pulse width of 6μs. (See Fig. 5-143.)

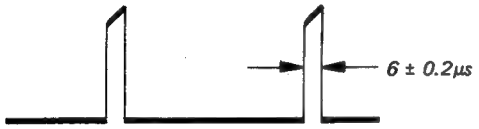


Fig. 5-143.

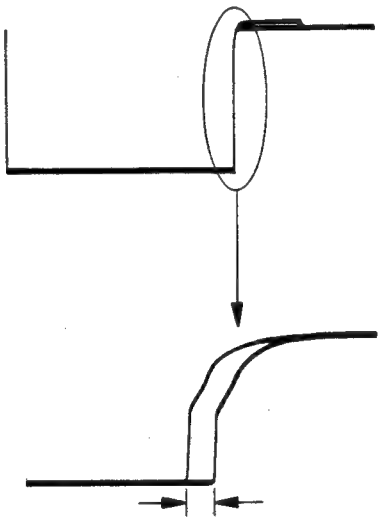


Fig. 5-144.

1/2H Pulse Width Adjustment

5. Connect the probe to TP7 on the V board.
6. Adjust RV3 on the V board so that these pulses coincide with each other completely as shown in Fig. 5-144. (The oscilloscope time axis should be set at 0.1μs.)

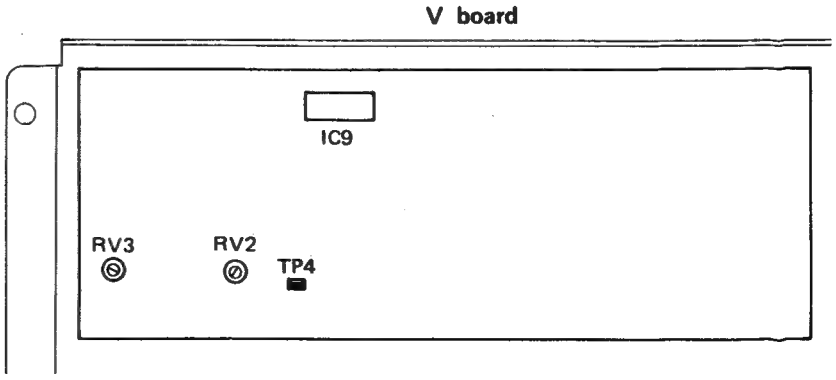


Fig. 5-145.

33. U Board Crosshatch Adjustment

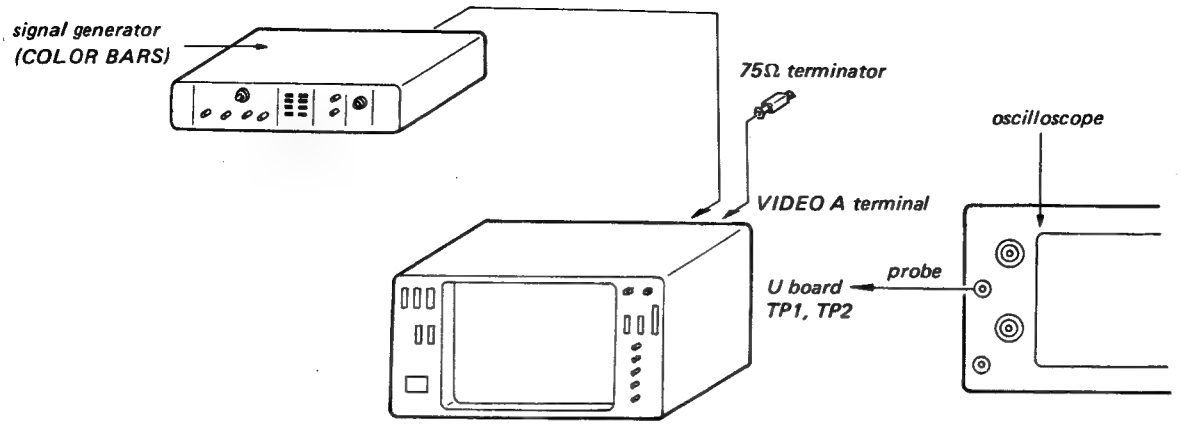


Fig. 5-146

1. Complete the connections as shown in Fig. 5-146.
2. Turn on the power of this monitor. Set the INPUT switch to A, the SYNC switch to INT, and the incorporated CROSSHATCH switch to ON for reciiving the crosshatch.

Crosshatch H. Pulse Waveform Shaping

3. Connect the oscilloscope probe to TP 1 on the U board.
4. Turn L2 fully clockwise, turn it gradually counterclockwise, and set it at the point where the falling hump of the pulse waveform vanishes. (See Fig. 5-147.)

Crosshatch H. Pulse Width Adjustment

5. Adjust RV 2 for a pulse width of 0.18 μS. (See Fig. 5-148.)

Crosshatch H. BLK Width Adjustment

6. Connect the probe to TP 2.
7. Adjust RV 3 for an H.BLK width of 8 μS. (See Fig. 5-149.)

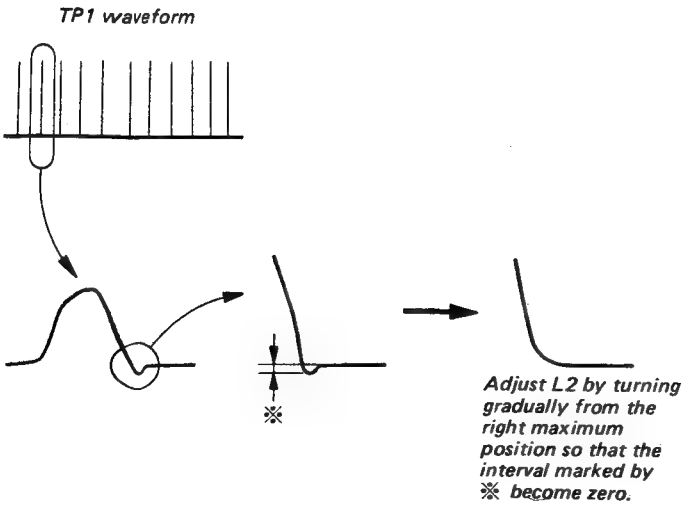


Fig. 5-147.

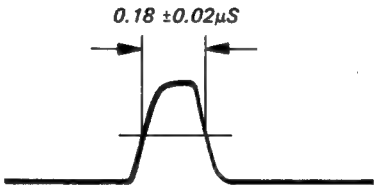


Fig. 5-148.

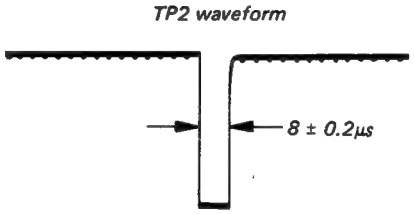


Fig. 5-149.

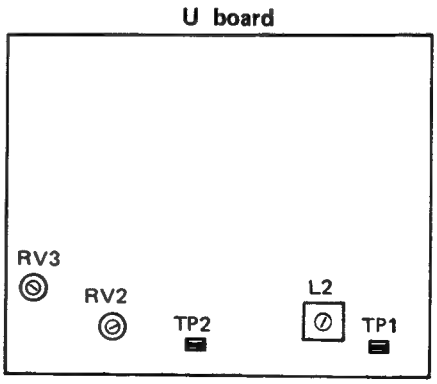


Fig. 5-150.

34. Linearity Adjustment

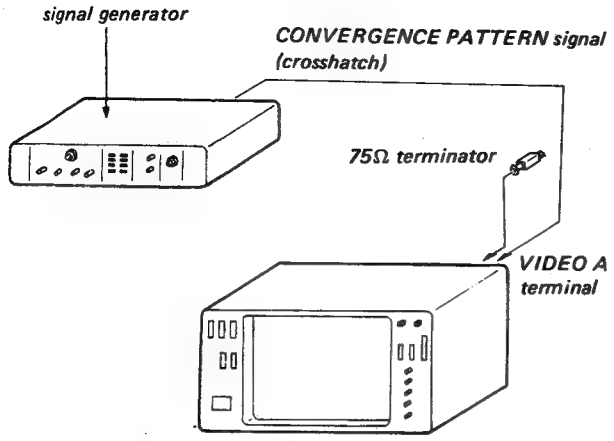


Fig. 5-151.

1. Complete the connections as shown in Fig. 5-151 and turn on the power of this monitor.

V. Lamp Adjustment

(1) Connect the oscilloscope probe to TP1 on the DA board.
(2) Adjust RV13 on the DA board so that the V. LAMP waveform is 12 Vp-p. (See Fig. 5-152.)

Fig. 5-152.

EXP. V. Center Adjustment **(Use the linearity gauge.)**

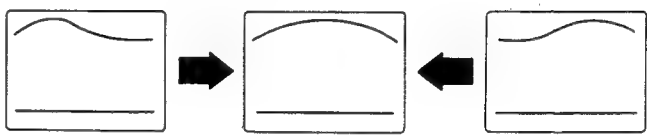
(1) Receive the crosshatch signal.
(2) Set RV15 (V. Center) on the DA board to its mechnical center.
(3) Set up the EXP. mode (by turning on the V. DELAY switch) and turn RV14 on the DA board for matching the V. center in the EXP. mode.
(4) Change the mode to Normal and turn RV15 on the DA board for matching the V. center in the Normal mode.
(5) Repeat Steps (3) and (4) two or three times for tracking.

EXP. H Size Adjustment

(1) Make this monitor receive the crosshatch signal.
(2) Set up the EXP. mode (turn on the V. DELAY switch).
(3) Adjust RV27 on the DA board for the H size in the NORMAL mode.
(4) Set up the NORMAL mode and confirm the H size.
(5) Repeat Steps (2) to (4) two or three times for tracking.

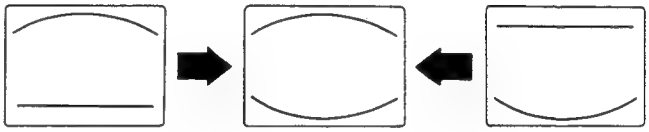
V. Linearity Adjustment

1. V. Pin Distortion Adjustment
   (1) Make this monitor receive a CONV. pattern signal and present only the H. lines on the screen.
   (2) Turn RV 1 and RV 2 on the E board fully clockwise.
   (3) Turn L2 on the E board for matching of a V. pin distorition phase. (See Fig. 5-153.)
   (4) Turn RV 1 on the E board for balancing the upper and lower V. pin distortion. (See Fig. 5-154.)
   (5) Turn RV 2 on the E board for matching the amplifier of the V. pin distortion. (See Fig. 5-155.)



Turn L2 counterclockwise. *Turn L2 clockwise.*

Fig. 5-153.



Turn RV1 counterclockwise. *Turn RV1 clockwise.*

Fig. 5-154.

Turn RV2 counterclockwise. *Turn RV2 clockwise.*

Fig. 5-155.

2. Linearity Adjustment (Use the linearity gauge.)
   (1) Put a mark on the mechanical center on picture tube face. (See Fig. 5-156.)

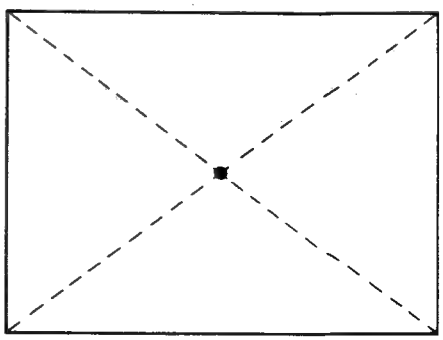


Fig. 5-156.

(2) Make this monitor receive a crosshatch signal from the signal generator and present only H. lines.
(3) Set up the UNDERSCAN mode.
(4) Make this monitor show 14H. lines and adjust the VERTICAL POSITION of the signal generator so that the space between the effective face edge of the picture tube and the first line is equal to the one between the effective face and the last line. (See Fig. 5-157.)

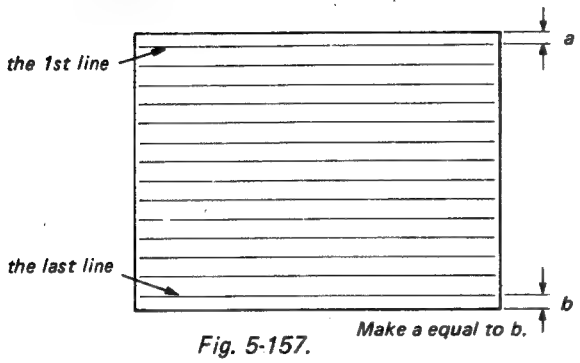


Fig. 5-157.

(5) Set up the NORMAL SCAN mode.
(6) Adjust RV16 on the DA board so that the center of the 14 H, lines (between the 7th and 8th lines from the top or the bottom line) matches the mechanical center of the picture tube.
(7) Put the center of the linearity gauge on the mechanical center of the picture tube and perform the following adjustments while observing the gauge.
(8) Turn RV15 on the DA board for matching the V. center.
(9) Adjust RV3 on the E board for matching the V. size.
(10) Turn RV16 on the DA board for matching the S-letter tilt. (See Fig. 5-158.) (Make the upper and lower unbalanced portion of the S-letter correction symmetrical.)
(11) Turn RV19 on the DA board for S-letter correction. (See Fig. 5-159.)
(12) Repeat Steps 8 to 11 for tracking.

Fig. 5-158.

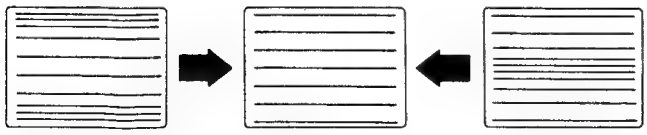


Fig. 5-159.

H. Linearity Adjustment **(Use the linearity gauge.)**

(1) Make this monitor receive the crosshatch signal and show only V. lines.
(2) Adjust RV20 on the DA board for the H. pin distortion tilt. (See Fig. 5-160.)
(3) Adjust RV23 on the DA board for the H. pin distortion (See Fig. 5-161.)

Fig. 5-160.

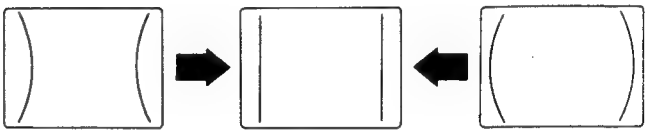


Fig. 5-161.

(4) Put a mark on the mechanical center of the picture tube. (See Fig. 5-156.)
(5) Set up the UNDERSCAN mode.
(6) Make this monitor show 17V. lines. Adjust the HORIZONTAL POSITION of the signal generator so that the space between the effective picture edge of the picture tube and the first line is equal to the one between the edge and the 14th line. (See Fig. 5-162.)
(7) Adjust L6 (H. LIN) on the E board so that the center line of the 14 lines (9th line from the left or the right) comes on the mechanical center of the picture tube.
(8) Set up the NORMAL mode.
(9) Put the linearity center gauge on the mechanical center of the picture tube. Perform the following adjustments while watching the gauge.
(10) Turn RV4 on the E board for matching the H. center.
(11) Turn RV6 (H. SIZE) on the E board for matching the right side of the screen.
(12) Turn L6 (H. LIN) on the E board for matching the left side of the screen.
(13) Repeat Steps (2), (3), and (9) through (12) for tracking.

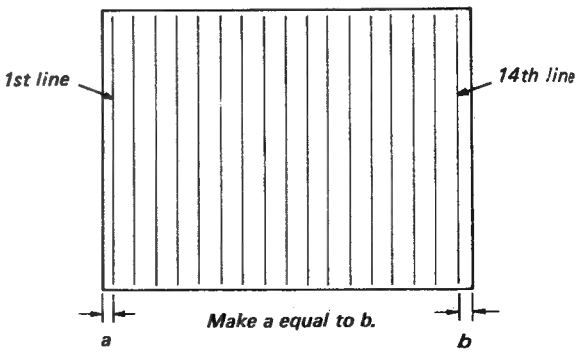
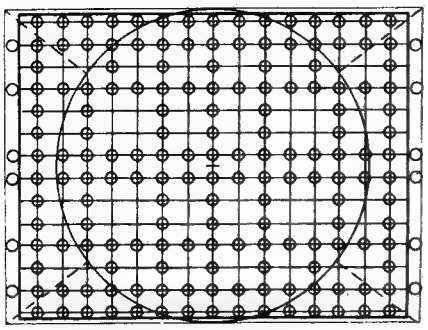


Fig. 5-162.

Note: For the linearity confirmation, gaze the linearity gauge in the manner that your eye is perpendicular to the gauge.



Screeen after V. and H. linearity adjustments.

Fig. 5-163.

UNDER SCAN Linearity Adjustment

(1) Make this monitor receive the crosshatch signal and set up the UNDER SCAN mode.
(2) Connect the digital voltmeter to the emitter of Q16 on the E board and adjust RV5 (U.S. H. SIZE) for a 81.0V dc reading..
(3) Turn RV22 on the DA board for adjusting the H. pin distortion in the UNDER SCAN mode.
(4) Turn RV18 on the DA board for adjusting the S-letter correction.
(5) Turn RV12 on the DA board so that the V. SIZE in the UNDER SCAN mode is "3" for the H. SIZE "4". (See Fig. 5-164.) (i.e., make the ratio of the H. SIZE and the V. SIZE 4:3.)
(6) Repeat Steps (3) to (5) for tracking.

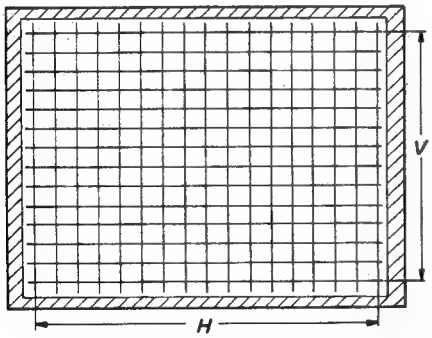


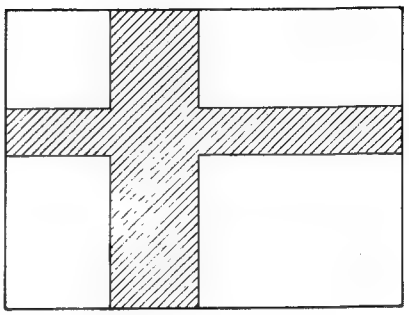
Fig. 5-164.

EXP. Linearity Adjustment

(1) Turn on the CROSSHATCH switch (S4) on the DA board to make this monitor receive the incroporated crosshatch signal, and set up the EXP. mode (turn on the V. DELAY switch).
(2) Set RV17 (EXP. S-LETTER) on the DA board to the mechanical center.
(3) Turn RV21 on the DA board for adjusting the H. pin distrotion in the EXP mode.
(4) Confirm the EXP. H Size Adjustment on page 5-48.

H. FREQ. Adjustment

(1) Make this monitor receive the crosshatch signal and set the SYNC switch to ext. (The picture flows.)
(2) Adjust RV24 on the DA board so that the picture becomes stationary or moves slowly. (See Fig. 5-165.)



Make picture stop or move slowly.

Fig. 5-165.

H. SYNC Pulse Width Adjustment

(1) Make this monitor receive the crosshatch signal.
(2) Connect the oscilloscope to TP5 on the DA board. Adjust RV26 on the DA board so that the H. SYNC pulse width becomes 5μs. (See Fig. 5-166.)

DA board TP5 waveform

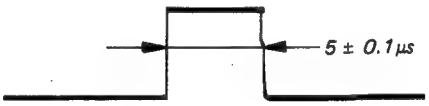


Fig. 5-166.

Picture Phase Adjustment

(1) Turn RV10 on the E board fully counterclockwise.
(2) Make this monitor receive the crosshatch signal, set up the UNDER scan mode, and set the BRIGHTNESS knob to MAX.
(3) Adjust RV25 on the DA board so that the outside raster portions of the picture become equal to at the right and the left sides. (See Fig. 5-167.)
(4) Set up the NORMAL SCAN and readjust the H. CENTER (with using RV4 on the E board).

Note: Since the picture phase is varied by the H. FREQ., H. SIZE, and H. BLK Pulse width, the H. FREQ., H. SIZE, and H. BLK pulse width should be readjusted after the picture phase adjustment when these are varied.

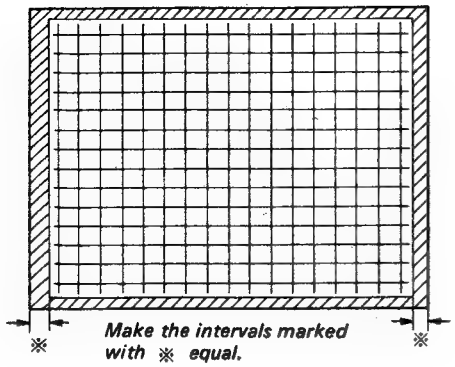


Fig. 5-167.

H. BLK Pulse Width Adjustment

(1) Make this monitor receive the crosshatch signal and set up the UNDER SCAN mode.
(2) Connect the oscilloscope probe to TP5 on the E board (its earth to TP6) and turn RV10 for adjusting the H. BLK pulse width. (See Fig. 5-168.)

E board TP5 waveform

Fig. 5-168.

Note: Since the H. BLK pulse width is changed by the H. SIZE, the H. SIZE should be readjusted after the H. BLK pulse width adjustment when the H. SIZE is changed.

DA board

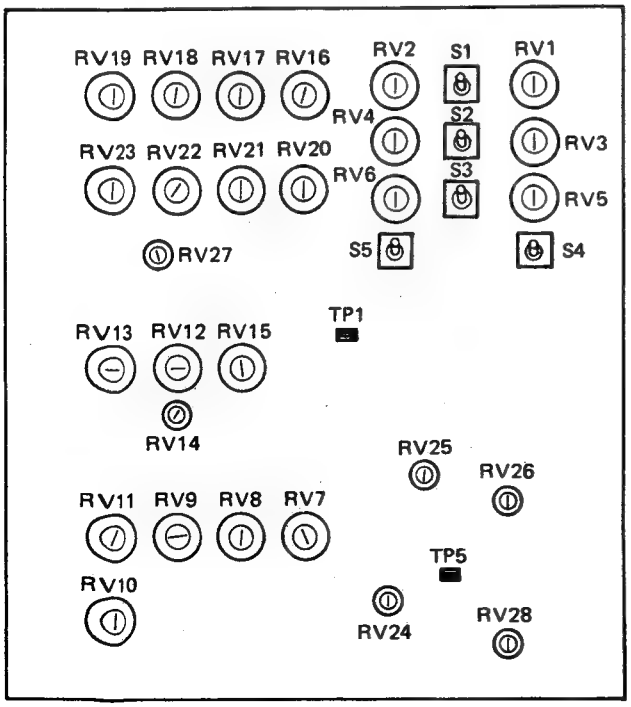


Fig. 5-170.

H. BLK Phase Adjustment

(1) Make this monitor receive the color-bar signal (turn on the EIA on the signal generator) and set up the UNDER SCAN mode.
(2) Set the BRIGHTNESS knob to MAX. Adjust RV7 on the E board so that the blanking width at the right and the left sides are equal to. (See Fig. 5-169.)

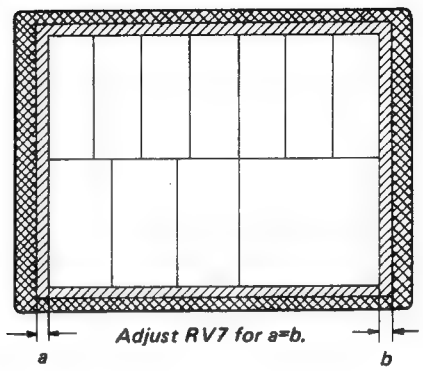


Fig. 5-169.

AFC SLOW FAST Position Adjustment

(1) Make this monitor receive the crosshatch signal.
(2) Adjust RV28 on the DA board so that the picture position does not vary when the AFC switch is switched to FAST and SLOW.

E board

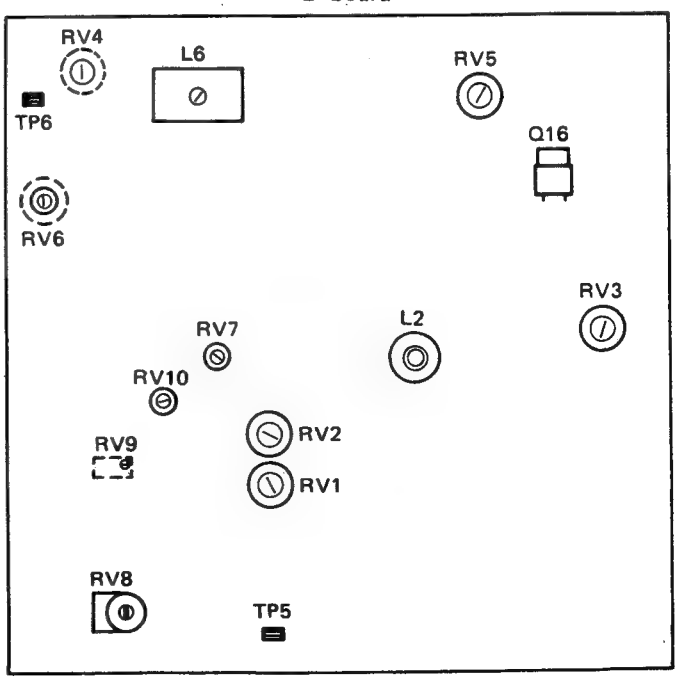
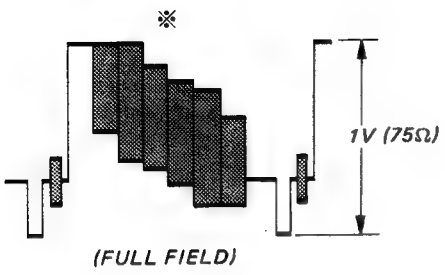


Fig. 5-171.

35. H DELAY Position Adjustment



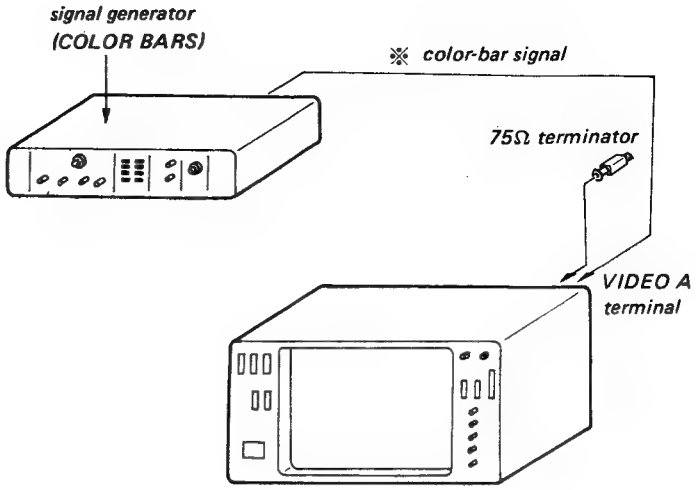


Fig. 5-172.

H. DELAY Position Adjustment

1. Complete the connections as shown in Fig. 5-172.
2. Turn on the power of this monitor. Set the INPUT switch to A and the SYNC switch to INT.
3. Turn RV 1 on the V board in the H. DELAY and V. DELAY operations so that the H. DELAY position is as shown in Fig. 5-173.

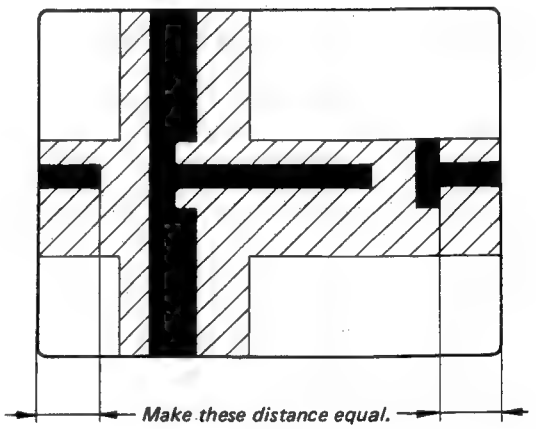


Fig. 5-173.

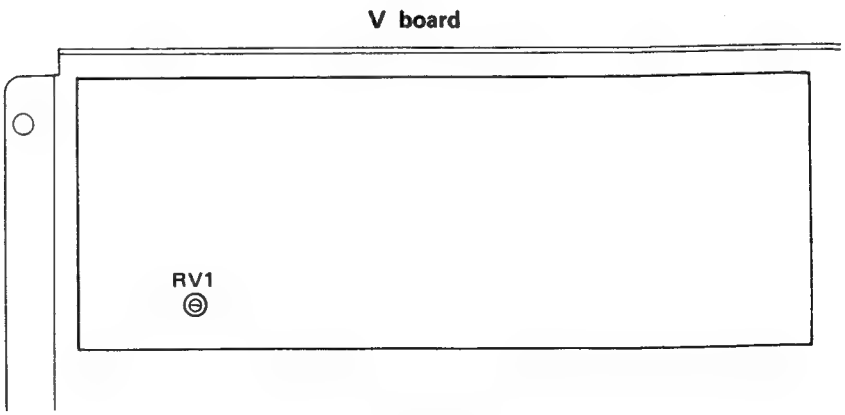


Fig. 5-174.

36. Crosshatch Adjustment

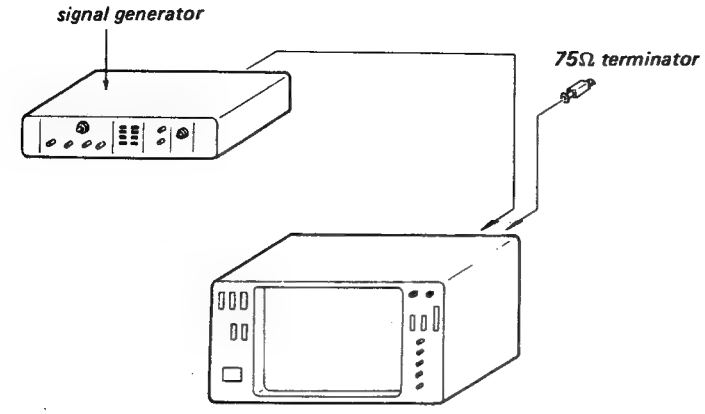


Fig. 5-175.

1. Complete the connections as shown in Fig. 5-175.
2. Turn on the power of this monitor. Set the INPUT switch to A, the SYNC switch to INT, and the incorporated CROSSHATCH switch to ON for making this monitor receive the crosshatch signal.
3. Set up the UNDER SCAN mode.
4. Set the RV1 on the U board to the fully clockwise and turn L1 for obtaining 16 horizontal lines.
5. Set up the NORMAL SCAN.
6. Adjust RV 1 and L1 so that the ratio of 12 horizontal portions and 9 vertical portions is approx. 4:3 and the horizontal positions becomes symmetrical. (See Fig. 5-176.)
7. Set up the UNDER SCAN mode and check that the 16th line is not observed at the right side.

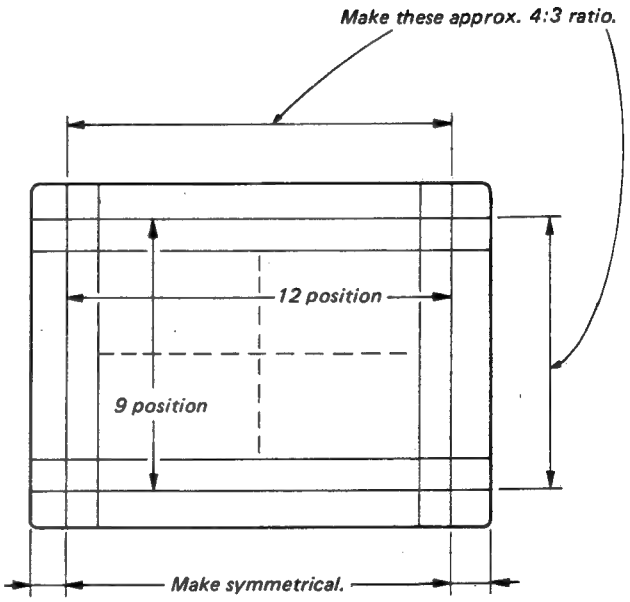


Fig. 5-176.

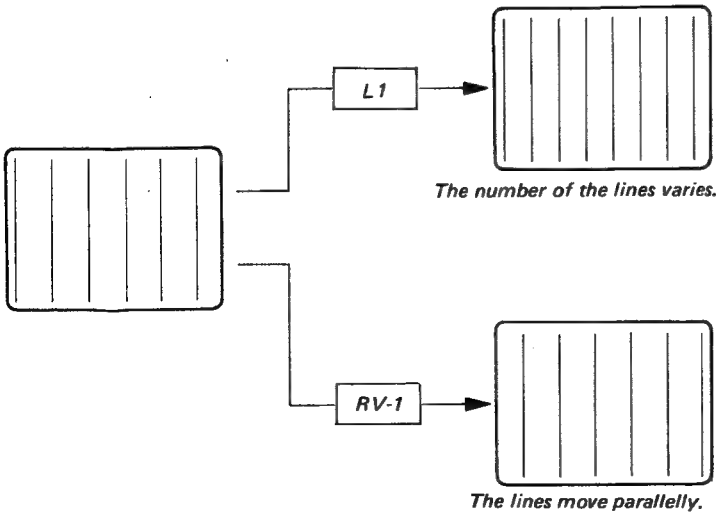


Fig. 5-177.

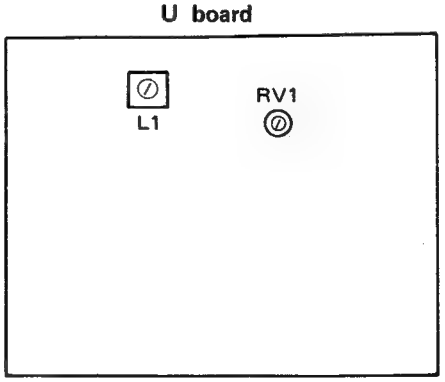


Fig. 5-178.

SECTION 6
DIAGRAMS

6-1. MOUNTING AND SCHEMATIC DIAGRAMS

Note: (for schematic diagrams)

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

- All capacitors are in μF unless otherwise noted. pF : μμF 50 WV or less are not indicated except for electrolytics.
- All resistors are in ohms.
  kΩ : 1000 Ω; MΩ : 1000 kΩ
- : nonflammable resistor.
- △ : internal component.
- : direct connection to points marked on the chassis
- : panel designation.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- The components identified by ▣ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.
  When replacing components identified by ◪, make the necessary adjustments indicated. If results do not meet the specified value, change the component identified by ▣ and repeat the adjustment until the specified value is achieved.
  (Refer to R40 and R41 adjustment on page 5-9 and R69 adjustment on page 5-5).

  When replacing the part in below table, be sure to perform the related adjustment.

Part replaced (◪)	Adjustment
D13, R44, R53, R54, R58, R59, R69, R70, RV3 and IC3 on G board	R69 Adjustment on page 5-5
R13, R18, R23, R24, R40, R41 and RV1 on P board HV block	R40 and R41 Adjustment on page 5-9

- When replacing the part in blow table, be sure to perform the related adjustment or check.

Part replaced	Adjustment or Check
D14 on P board	R40 and R41 Adjustment on page 5-9
D10, D11, D12, D13, Q6, R17, R18 and R73 on G board	Operation Check of +90 V Protector on page 5-7

- Voltages are dc with respect to ground unless otherwise noted.
- Reading are taken with a 20,000-ohm-per-volt VOM.
- : adjustment for repair.
- ——— : B+ bus.
- — — —: B– bus.
- Readings and waveforms are taken with a color-bar signal input and with a 75Ω terminator connected to an open terminal.
- Switches and controls are set as follows unless otherwise noted.

  INPUT switch ..... A
  SYNC switch ..... INT
  MODE switch ..... AUTO
  UNDER SCAN switch ..... OFF
  DELAY-V switch ..... OFF
  DELAY-H switch ..... OFF
  BLUE ONLY switch ..... OFF
  AFC switch ..... FAST

  PHASE control
  CHROMA control
  BRIGHTNESS control
  CONTRAST control
  APERTURE control
  } PRESET position (fully counterclock-wise locked position)

- ※ : selected to yield optimum performance.

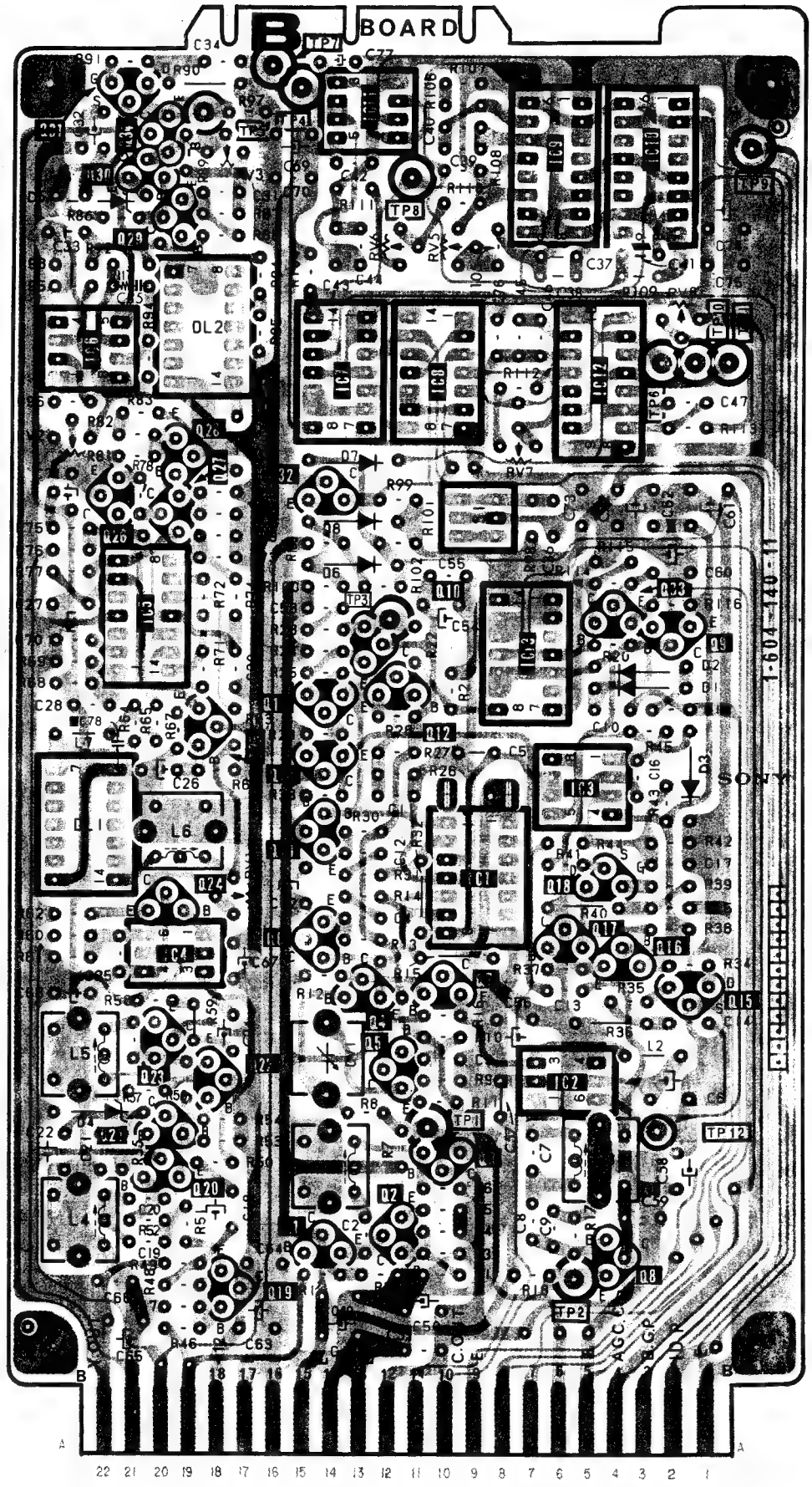
Note: (for mounting diagrams)

- •— : parts extracted from the conductor side.
- ■ : part mounted on the conductor side.
- : Conductor side pattern
- : Component side pattern

B BOARD

IC	Q	D	ADJ
11	31		
	34		
9,10	30		RV3
		5	
	29		RV5
			RV6
			RV8
6			
7,8,12			
	28	7	RV2
			RV7
	26,27,32	8	
		6	
5	33 9		
13	10	2	
	11 12	1	
	25		
	14		
3		3	
	13		
1			
	24 18		RVI
	6,17,16		
4	4,7,15		
	23		
2	22 5		CVI
		4	
	21		
	3		
	20		
	1,2,8		
	19		

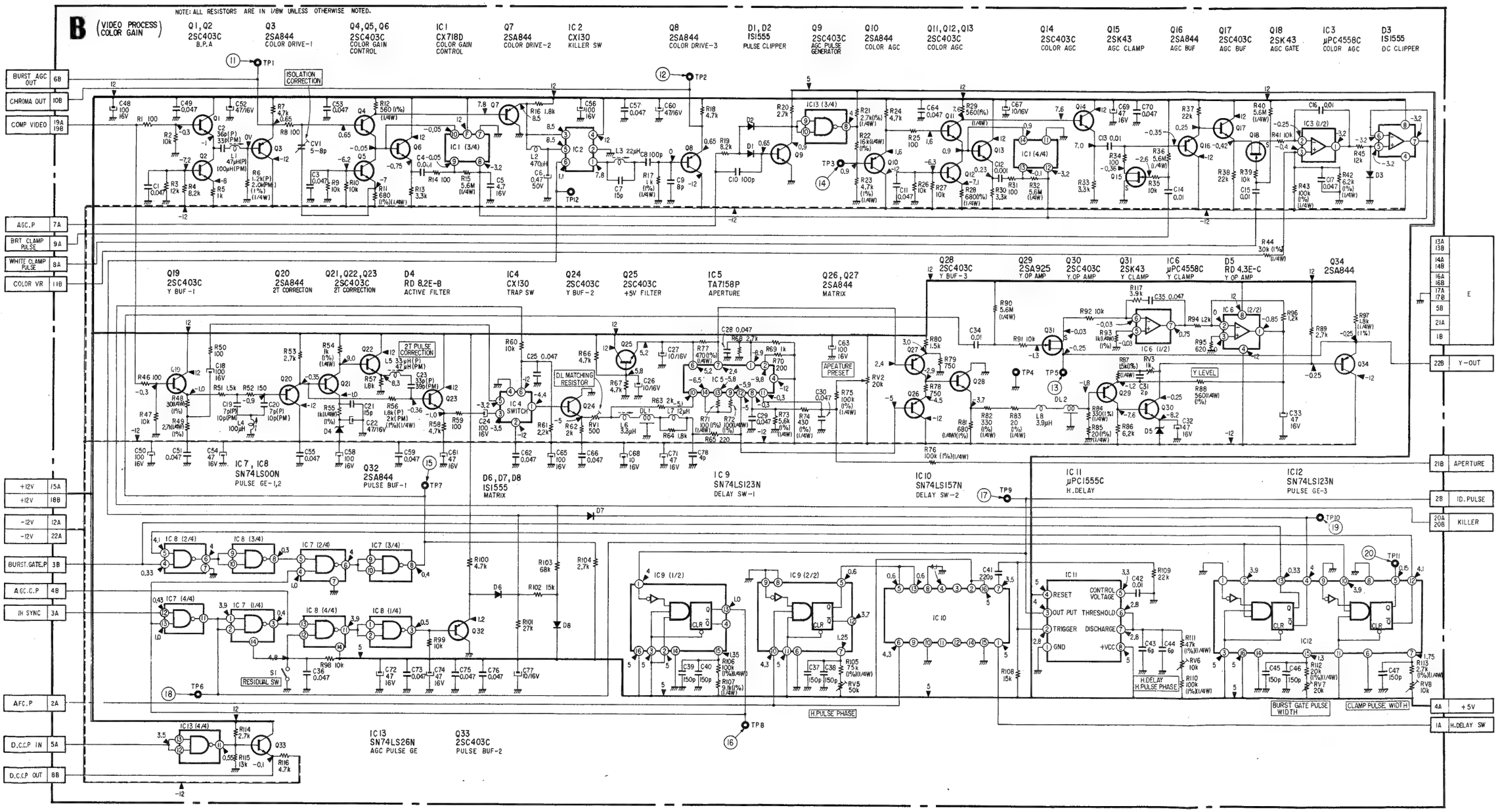
| IC | Q | D | ADJ |



22A–1A: PARTS MOUNTED SIDE FOIL (PRINTED WITH PINK) TERMINAL REFERENCE
22B–1B: FOIL ONLY SIDE (PRINTED WITH GRAY) TERMINAL REFERENCE

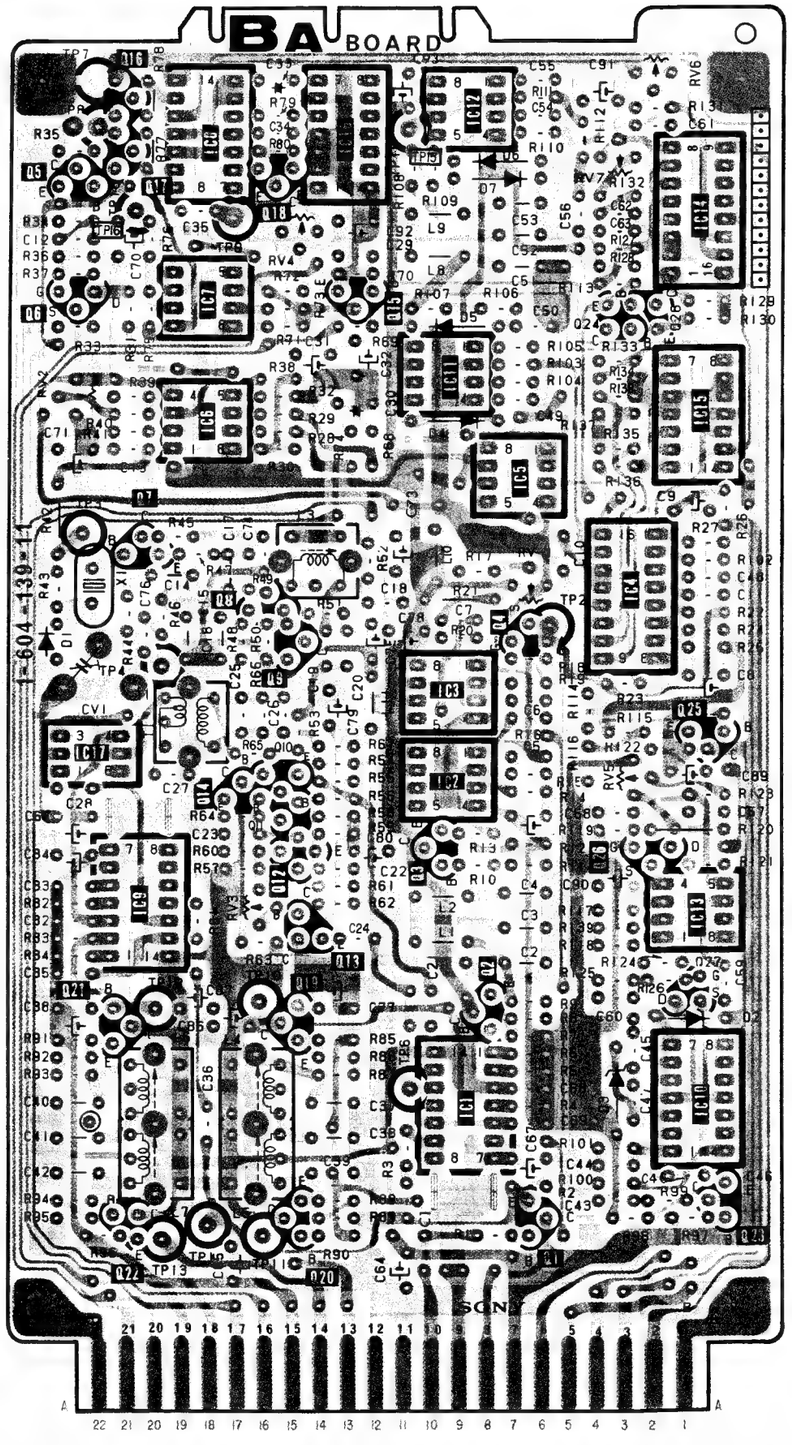
B BOARD

ALL RESISTORS ARE 1/8W UNLESS OTHERWISE NOTED.
ALL RESISTOR'S TOLERANCE ARE ±5% UNLESS OTHERWISE NOTED.
SEE PAGE 6-1 FOR OTHER NOTES.



BA BOARD

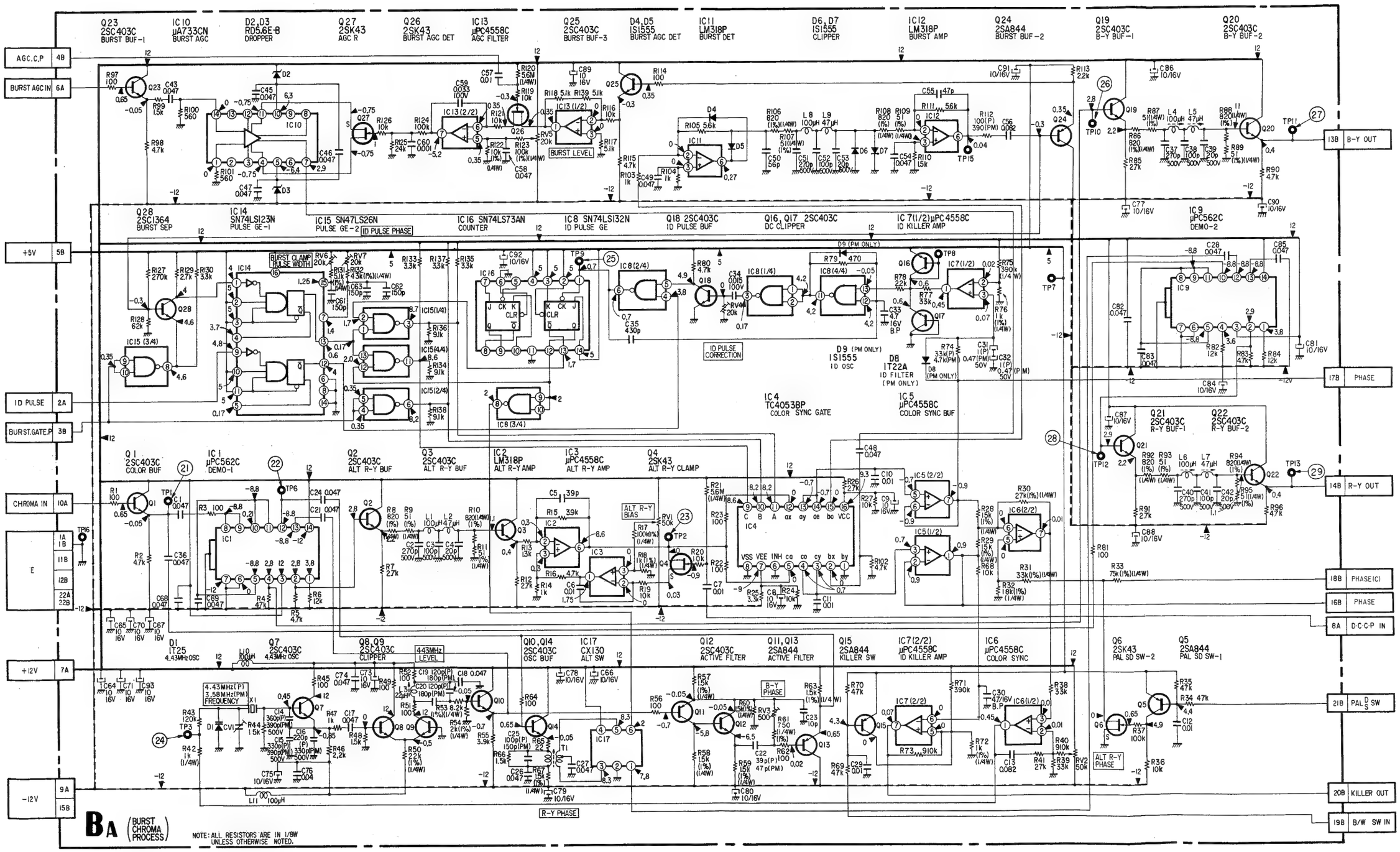
IC	Q	D	ADJ
	16		RV6
8,16,12			
	17	6	
	5 18	7	RV7
14			RV4
7	6 15 24 28	5	
11			
6 15		4	RV2
5			
	7		L3
4	8 4		RV1
	9	1	
3			CV1
17	25		
2			RV5
	14 10 11		
	12 3 26		
9 13			RV3
	13		
	27		
	21 19 2	2	
1,10		3	L6,L4
			L7,L5
	1,23 22,20		
IC	Q	D	ADJ



22A–1A: PARTS MOUNTED SIDE FOIL (PRINTED WITH PINK) TERMINAL REFERENCE
22B–1B: FOIL ONLY SIDE (PRINTED WITH GRAY) TERMINAL REFERENCE

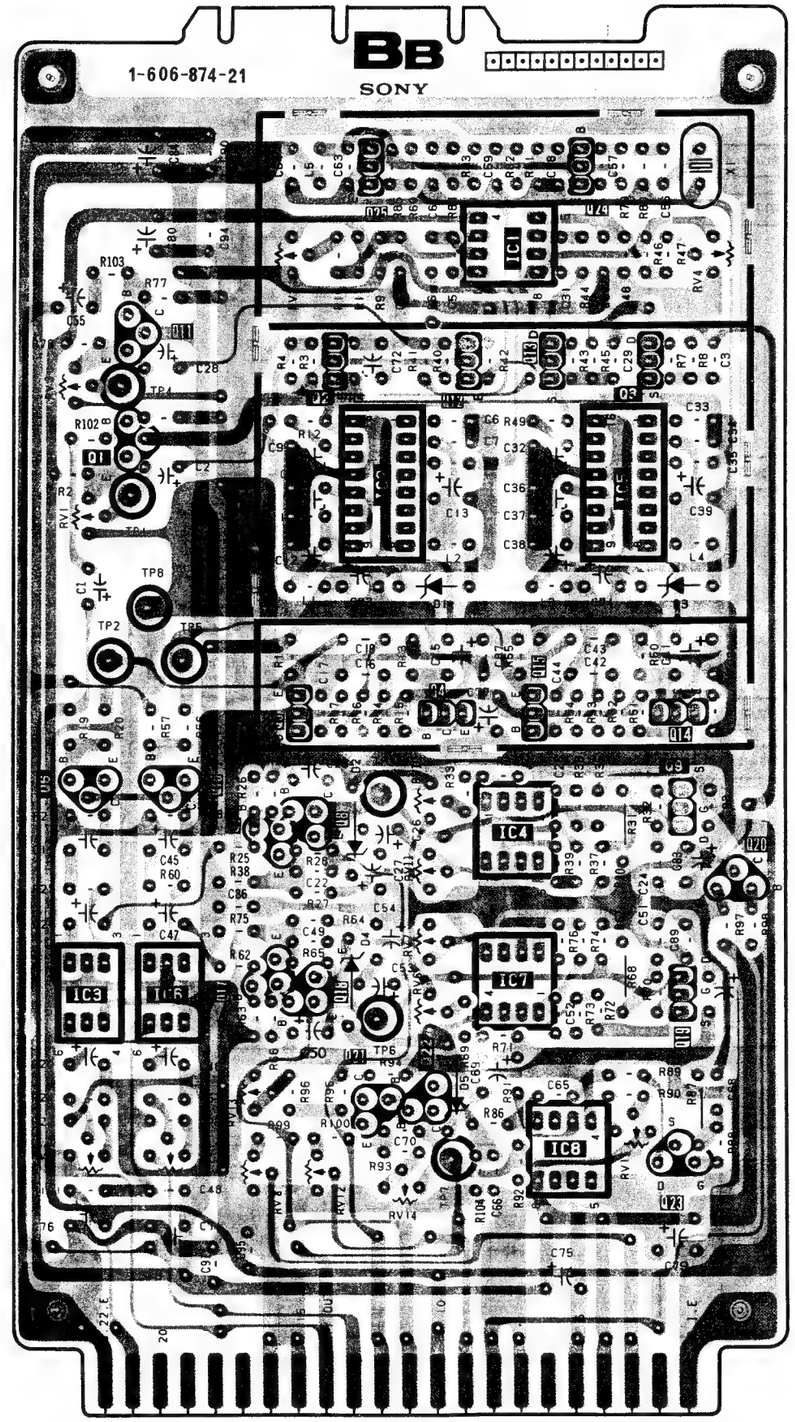
BA BOARD

ALL RESISTORS ARE 1/8W UNLESS OTHERWISE NOTED.
ALL RESISTOR'S TOLERANCE ARE ±5% UNLESS OTHERWISE NOTED.
SEE PAGE 6-1 FOR OTHER NOTES.



BB Board

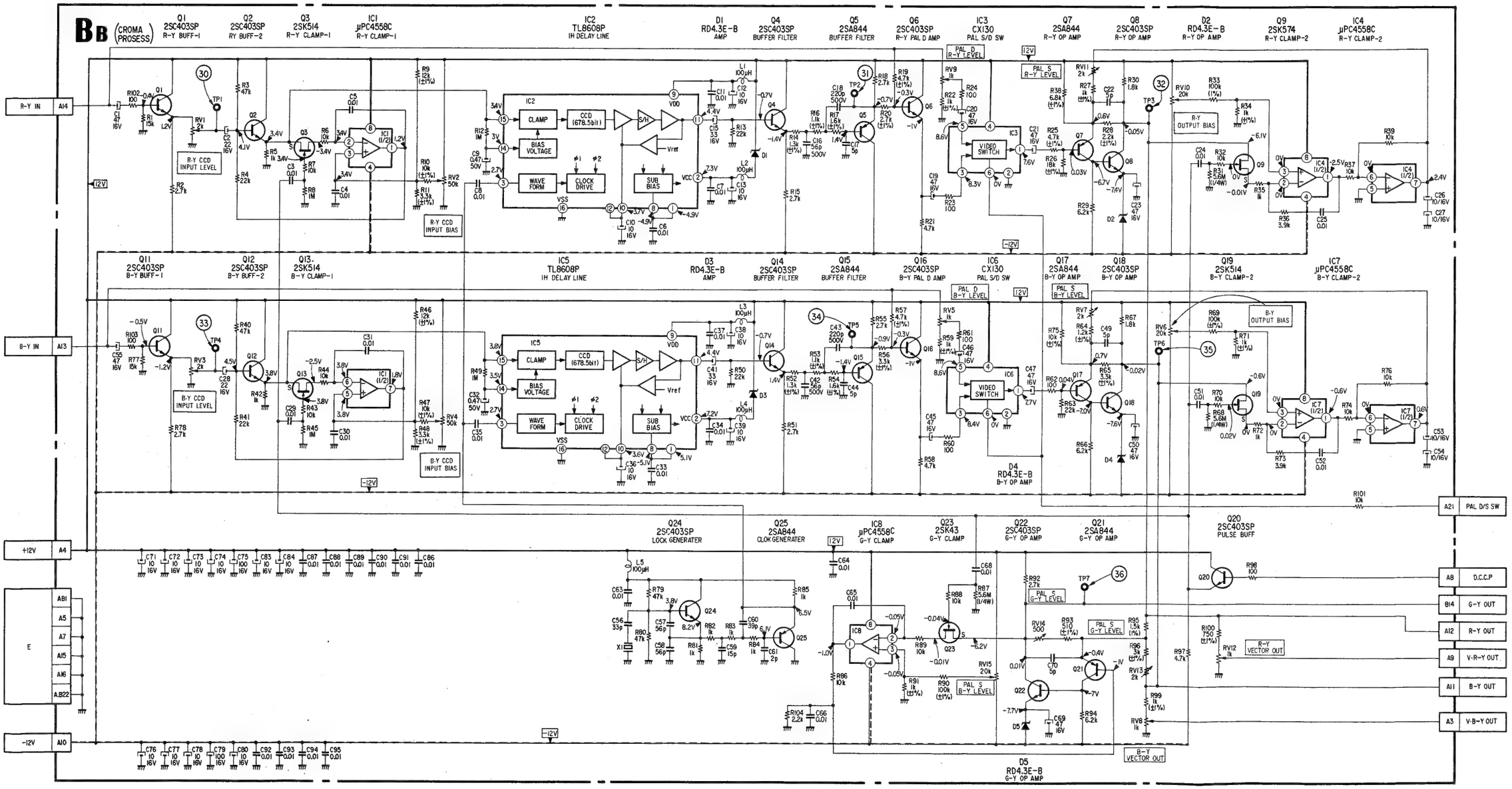
IC	Q	D	ADJ
	25,24		
1			RV2 RV4
	11		
	2,12,13,3		RV3
	1		
2,5			RV1
		1,3	
	5,4,15,14		
	6,16		
	9		RVI0
4	7 8	2	
			RVI1
	20		
			RV7
	17	4	
3,6 7	18,19		RV6
	21 22	5	RVI3
			RVI5 RV9 RV5 RV8 RVI2 RVI4
8	23		



22A–1A: PARTS MOUNTED SIDE FOIL (PRINTED WITH PINK) TERMINAL REFERENCE
22B–1B: FOIL ONLY SIDE (PRINTED WITH GRAY) TERMINAL REFERENCE

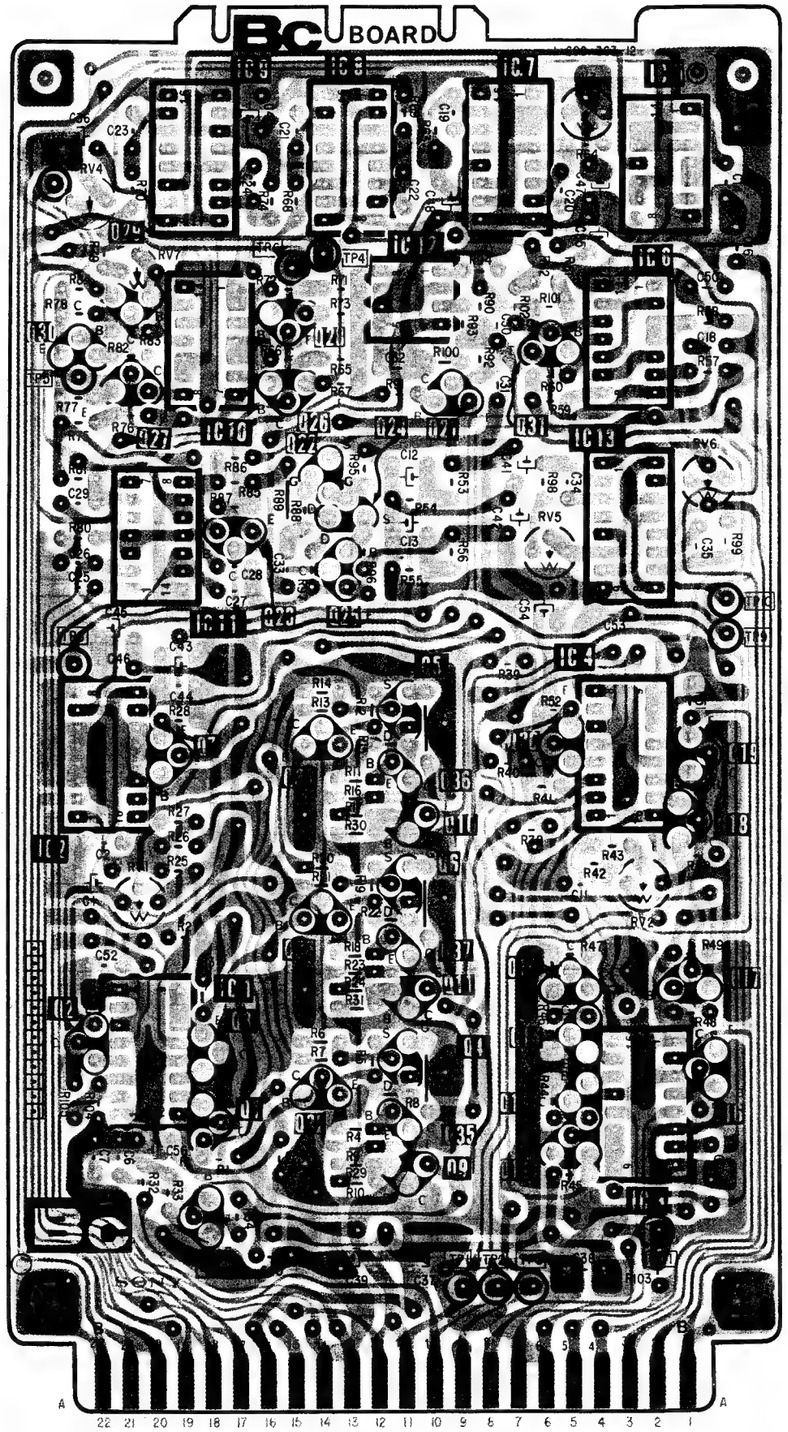
BB BOARD

ALL RESISTORS ARE 1/8W UNLESS OTHERWISE NOTED.
ALL RESISTOR'S TOLERANCE ARE ±5% UNLESS OTHERWISE NOTED.
SEE PAGE 6-1 FOR OTHER NOTES.



BC BOARD

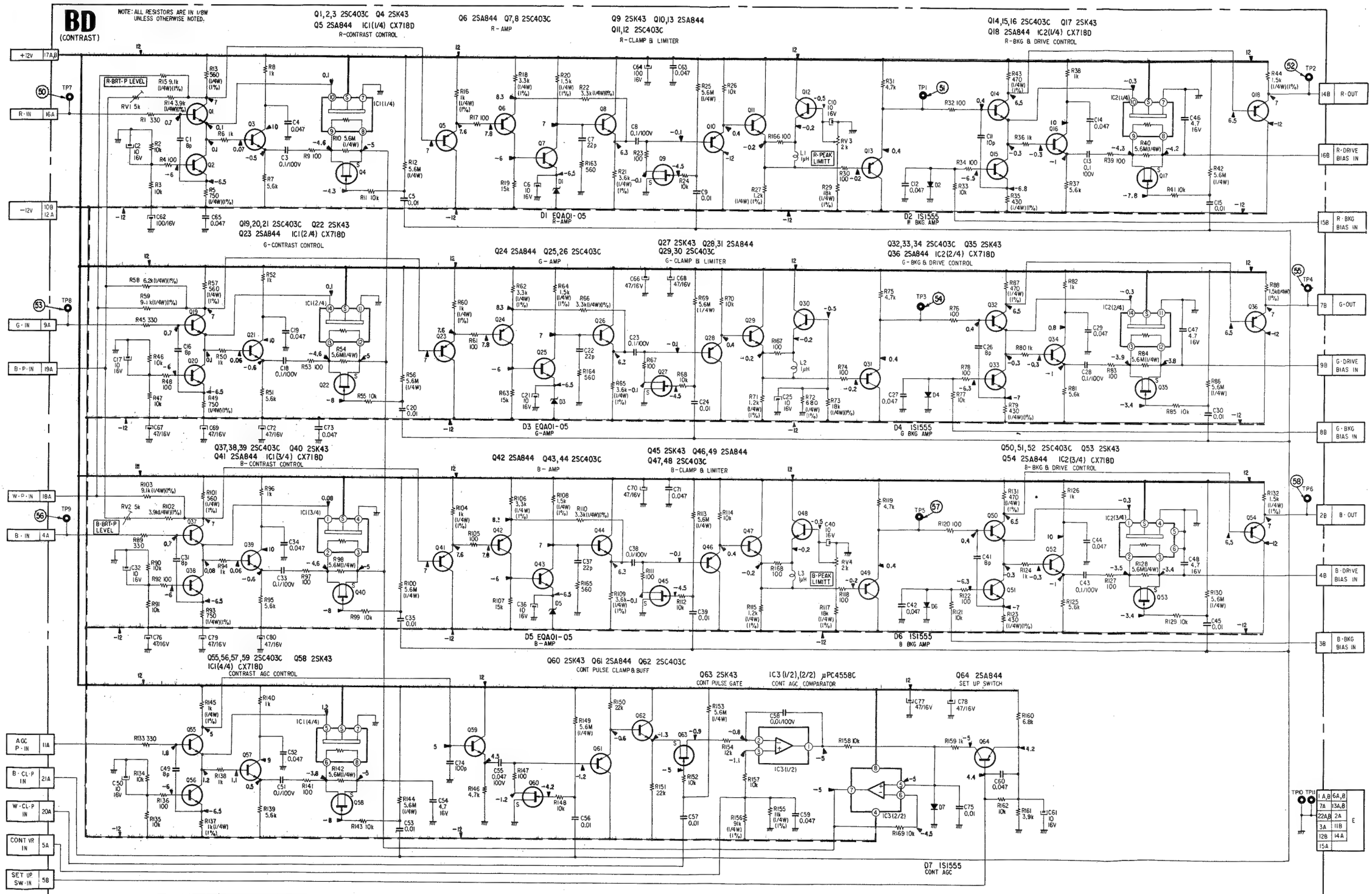
Q , IC	ADJ
IC9, IC8, IC7, IC5	RV3
	RV4
29 IC12 IC6 IC10 30 28 31	RV7
27 26 21	
22 24	RV6
IC11 23 IC13 25	RV5
5 IC4 7 33 20 19 IC2 36 10 18	
6 34 37	RV2 RV1
11 15 17 IC1 2 3 4 14,16	
32 13 1 35 12 IC3 9	
8	
Q , IC	ADJ



22A–1A: PARTS MOUNTED SIDE FOIL (PRINTED WITH PINK) TERMINAL REFERENCE
22B–1B: FOIL ONLY SIDE (PRINTED WITH GRAY) TERMINAL REFERENCE

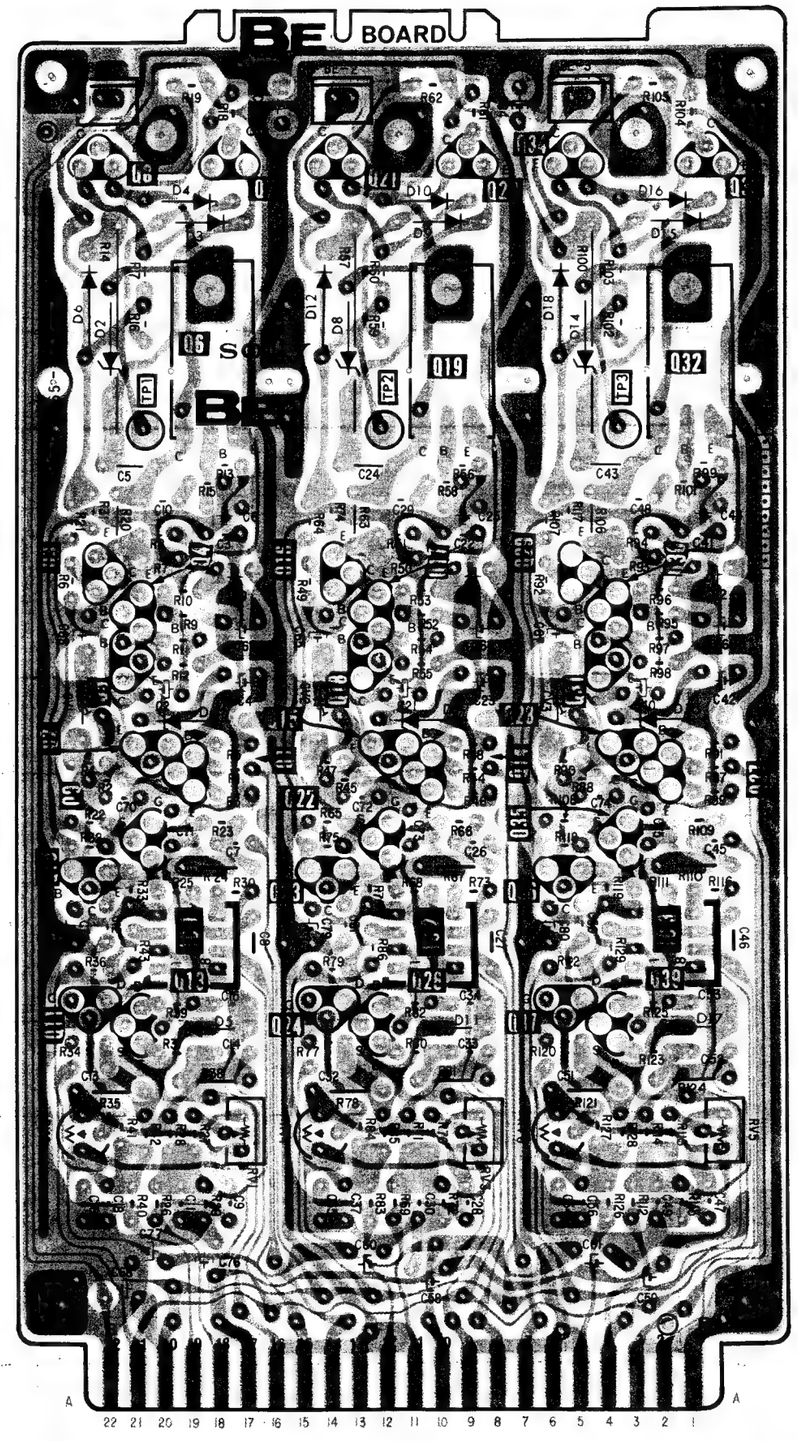
BD BOARD

ALL RESISTORS ARE 1/8W UNLESS OTHERWISE NOTED.
ALL RESISTOR'S TOLERANCE ARE ±5% UNLESS OTHERWISE NOTED.
SEE PAGE 6-1 FOR OTHER NOTES.



BE BOARD

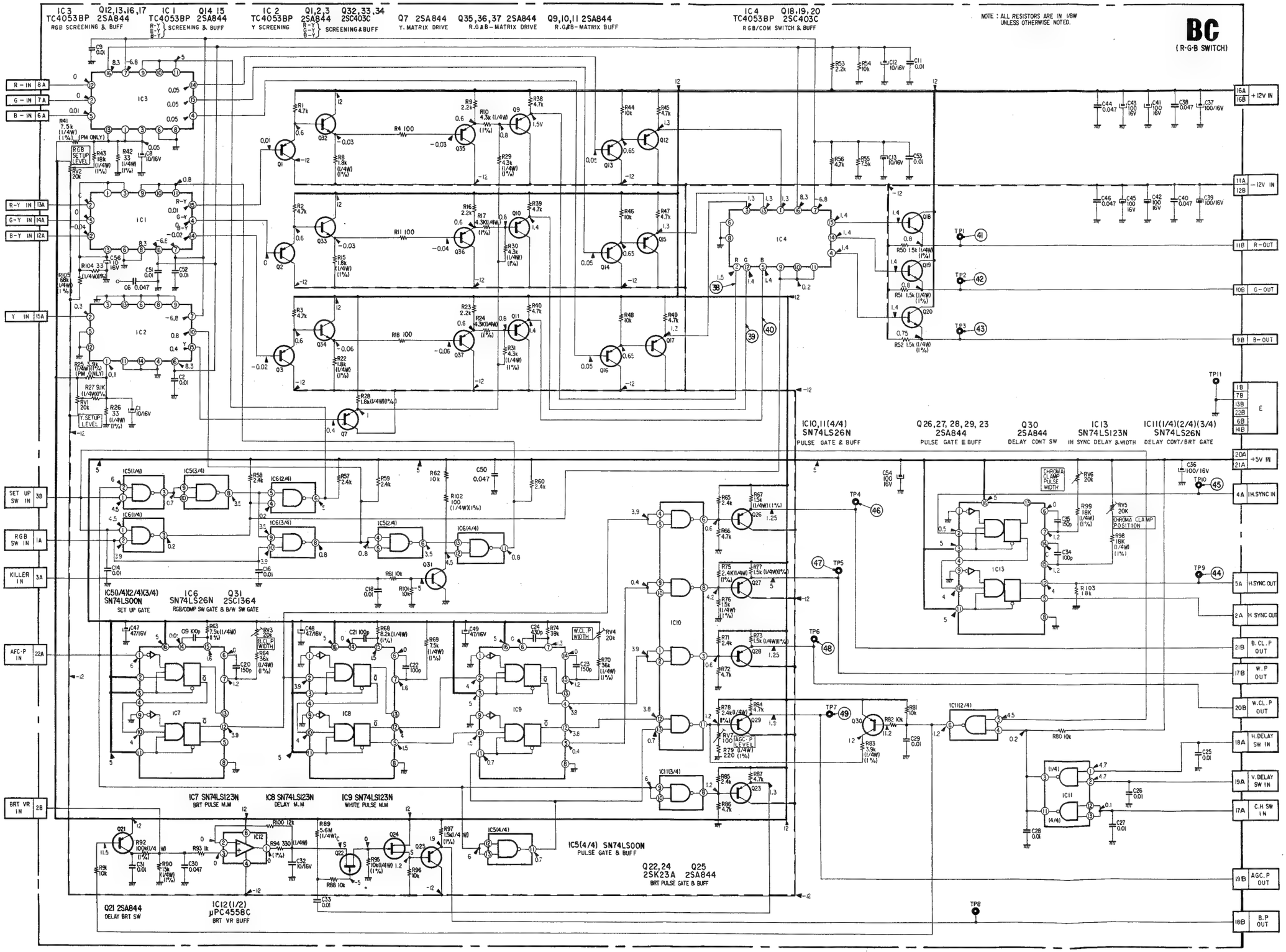
Q IC	D	ADJ
33 8,7,21,20,34		
	4,10,16 3,9,15	
	6,12,18	
6 19 32	2,8,14	
3 16 29		
4 17 30		
5 18 31		
	1 7 13	CV1,2,3
2 15 28		
1 14 27		
9 22 35		
10 23 36		
IC1, IC2, IC3		
11 24 37		
13 26 39	5 11 17	
		RV2,4,6 RV1,3,5
Q , IC	D	ADJ



22A–1A: PARTS MOUNTED SIDE FOIL (PRINTED WITH PINK) TERMINAL REFERENCE
22B–1B: FOIL ONLY SIDE (PRINTED WITH GRAY) TERMINAL REFERENCE

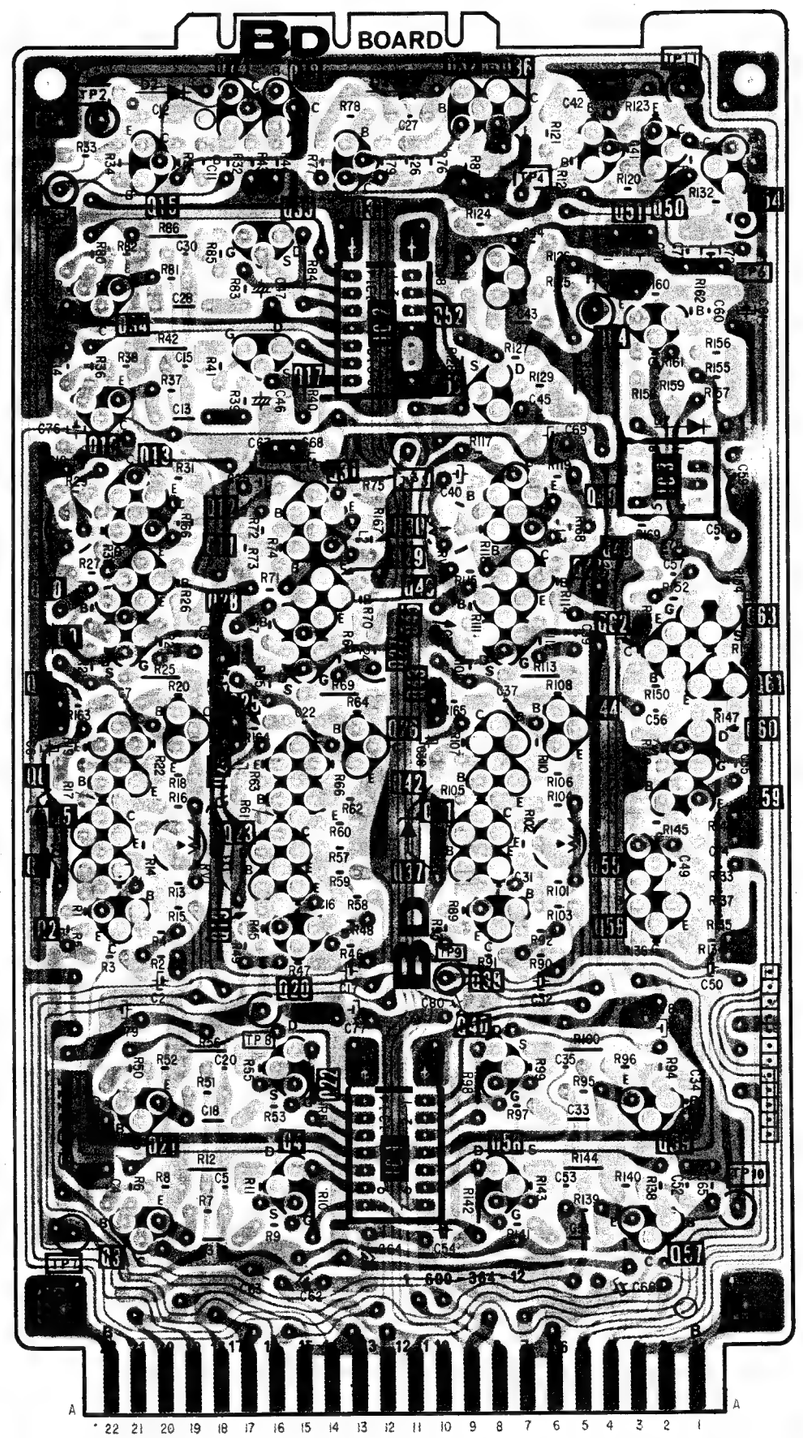
BC BOARD

ALL RESISTORS ARE 1/8W UNLESS OTHERWISE NOTED.
ALL RESISTOR'S TOLERANCE ARE ±5% UNLESS OTHERWISE NOTED.
SEE PAGE 6-1 FOR OTHER NOTES.



BD BOARD

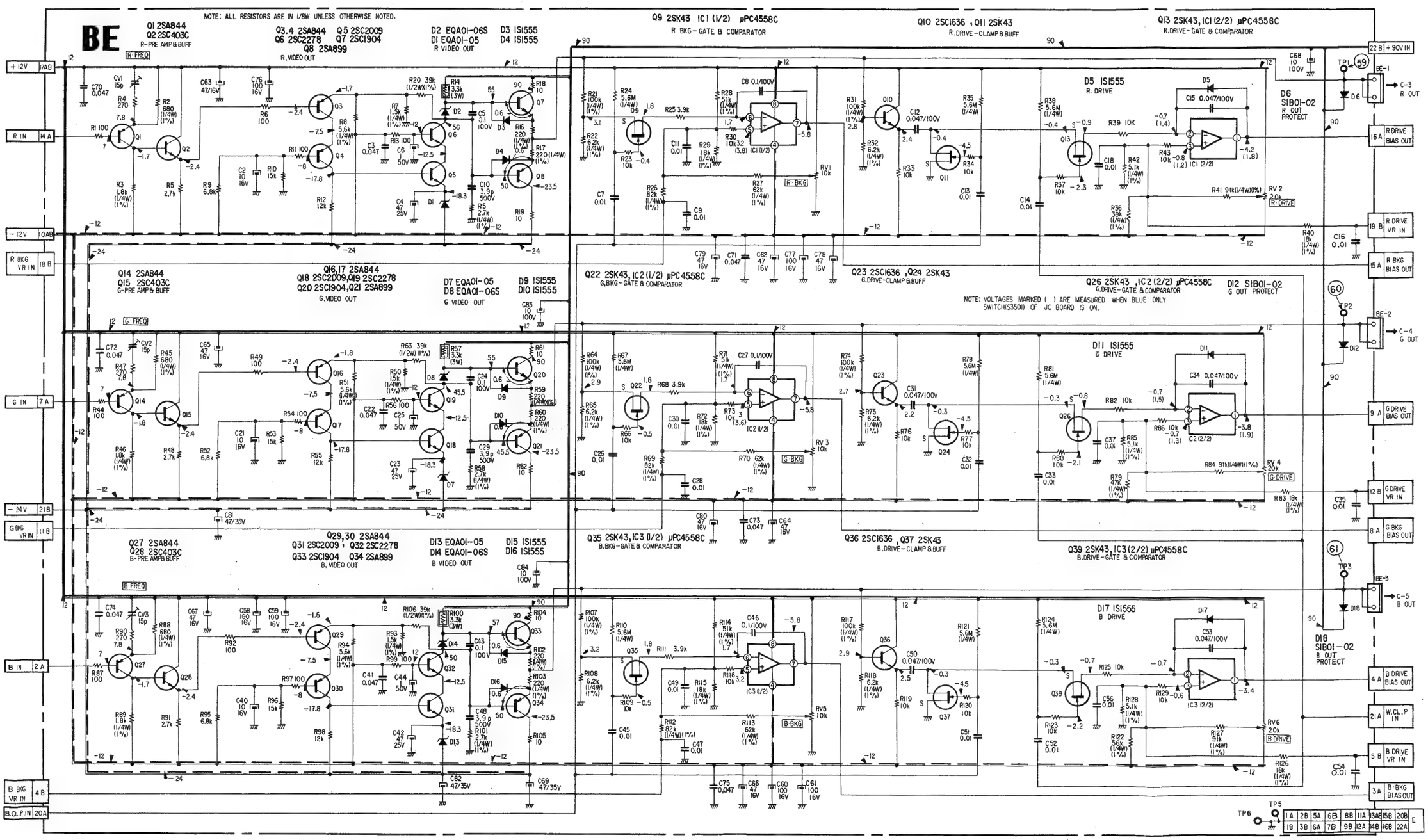
Q, IC	D	ADJ
	2 4 6	
14,18,32,36 51,50		
15 33 54		
35		
34 52 64		
IC2		
17 53		
16	7	
IC3		
13,31,49		RV3 RV4
12 48		
11 30		
10 29 47		
9,28,46,63		
27,45,62		
61		
7,8,25,26 43,44,60		
6,24,42,59		
5,23,41	1 3 5	RV1 RV2
1,19,37,55		
2,20,38,56		
22 40		
21 39		
IC1		
4 58		
3 57		
Q, IC	D	ADJ



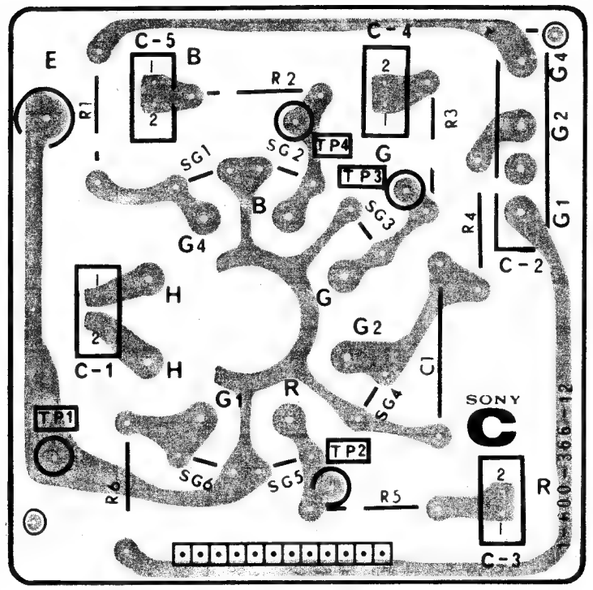
22A–1A: PARTS MOUNTED SIDE FOIL (PRINTED WITH PINK) TERMINAL REFERENCE
22B–1B: FOIL ONLY SIDE (PRINTED WITH GRAY) TERMINAL REFERENCE

BE BOARD

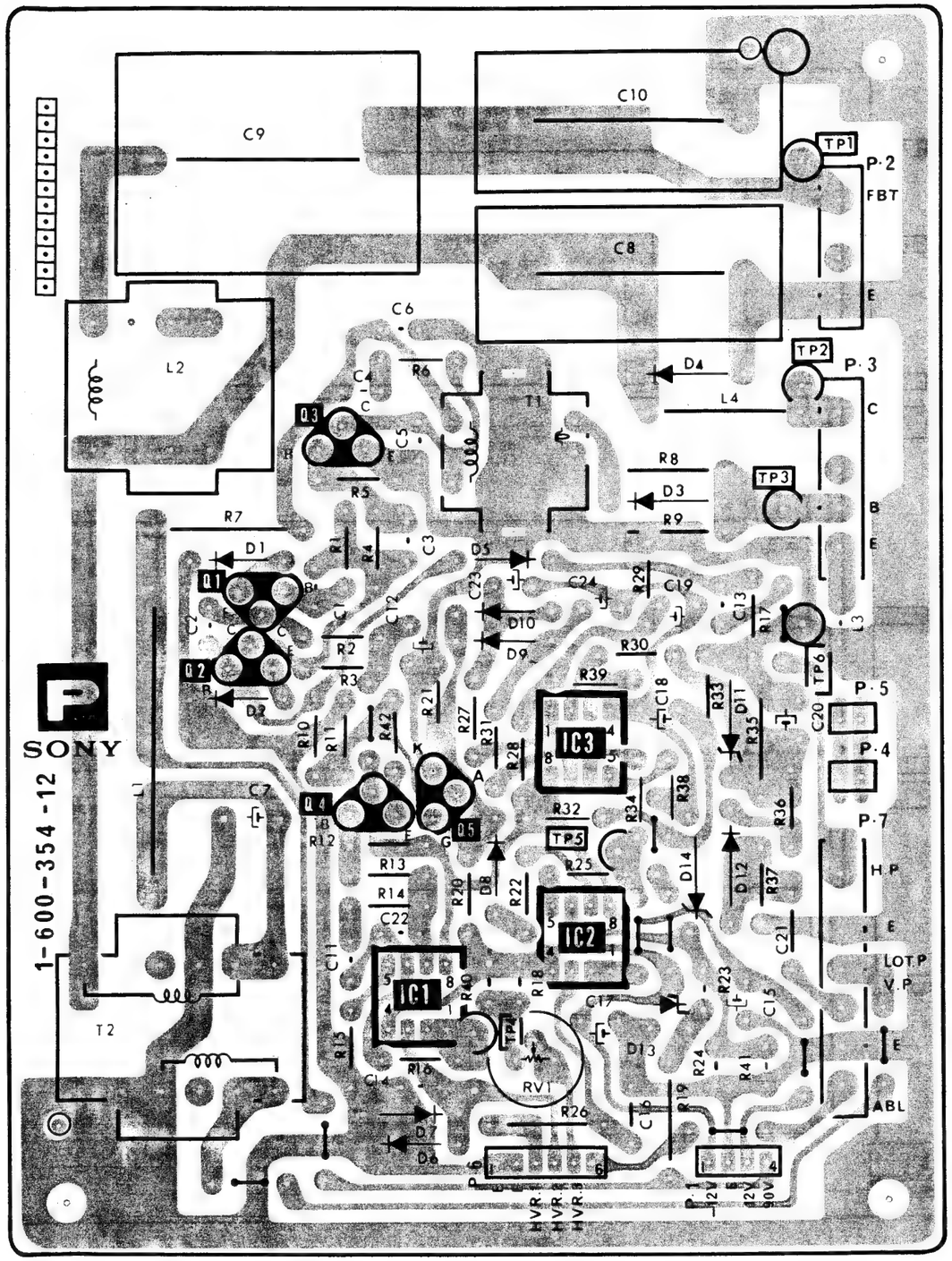
ALL RESISTORS ARE 1/8W UNLESS OTHERWISE NOTED.
ALL RESISTOR'S TOLERANCE ARE ±5% UNLESS OTHERWISE NOTED.
SEE PAGE 6-1 FOR OTHER NOTES.



C, P C, P

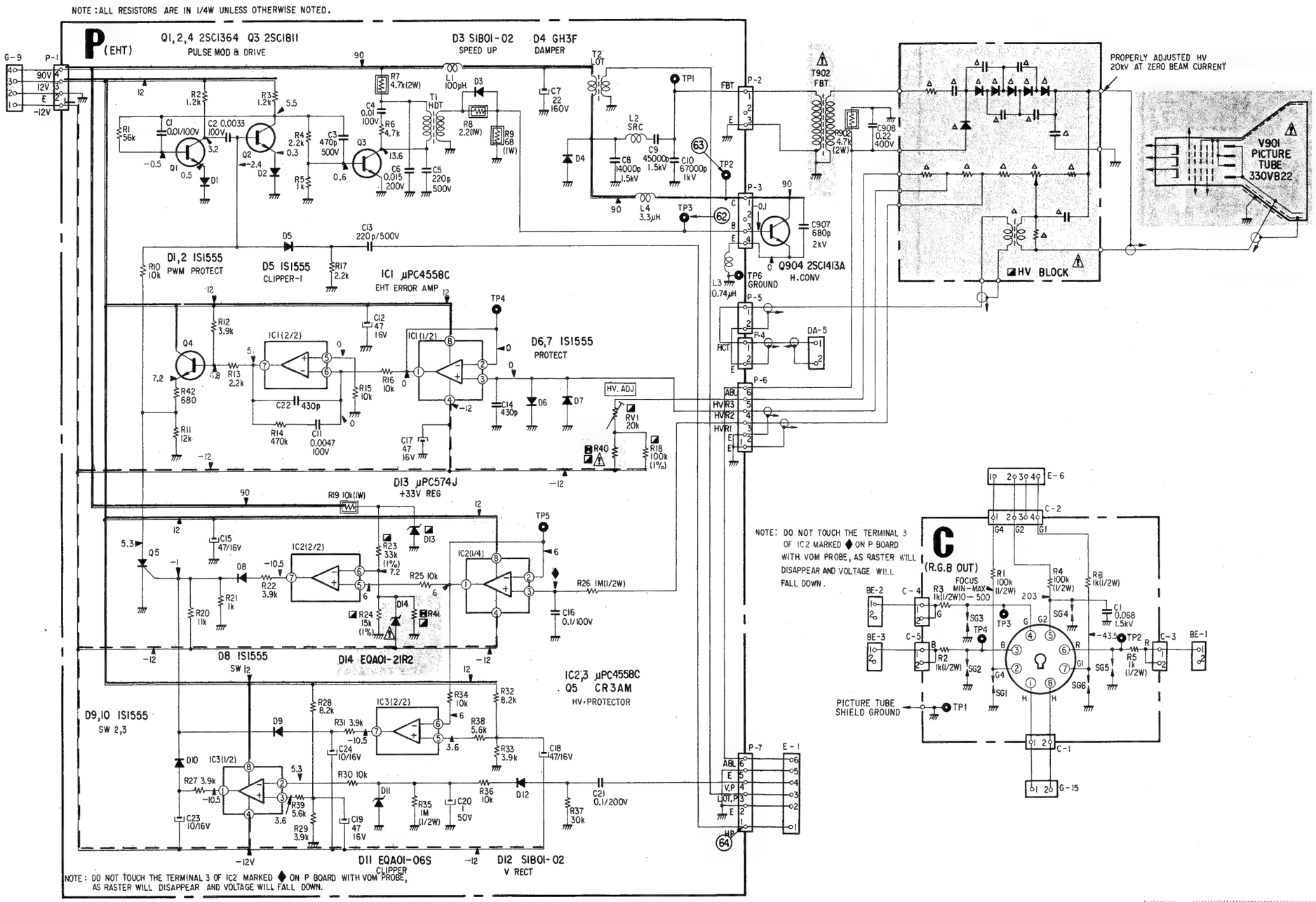


Q,IC	D	ADJ
	4	
3		
	3	
	1 5	
1		
	10 9	
2		
	2 11	
IC3		
4 5		
	8 12 14	
IC2		
IC1	13	
		RV1
	7 6	
Q,IC	D	ADJ



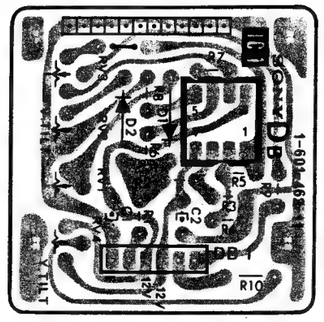
C AND P BOARDS

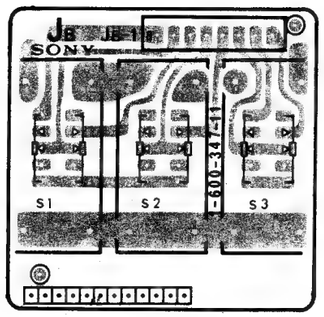
ALL RESISTORS ARE 1/4W UNLESS OTHERWISE NOTED.
SEE PAGE 6-1 FOR OTHER NOTES.

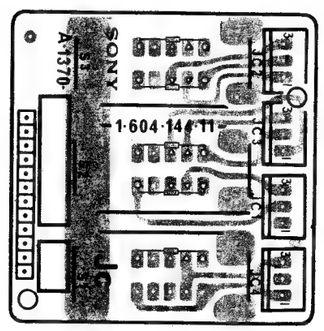


Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

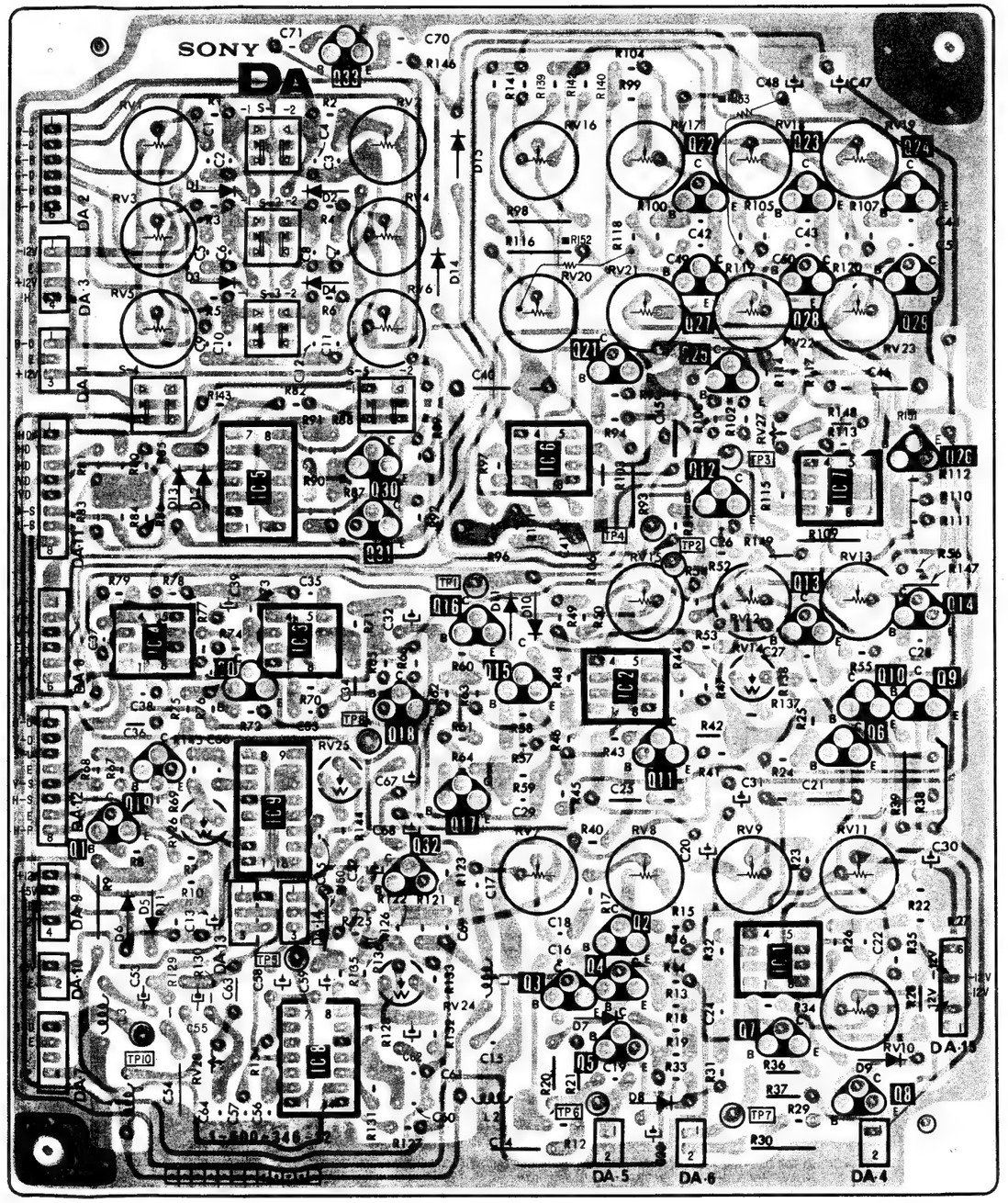
DA, DB, JB AND JC BOARDS







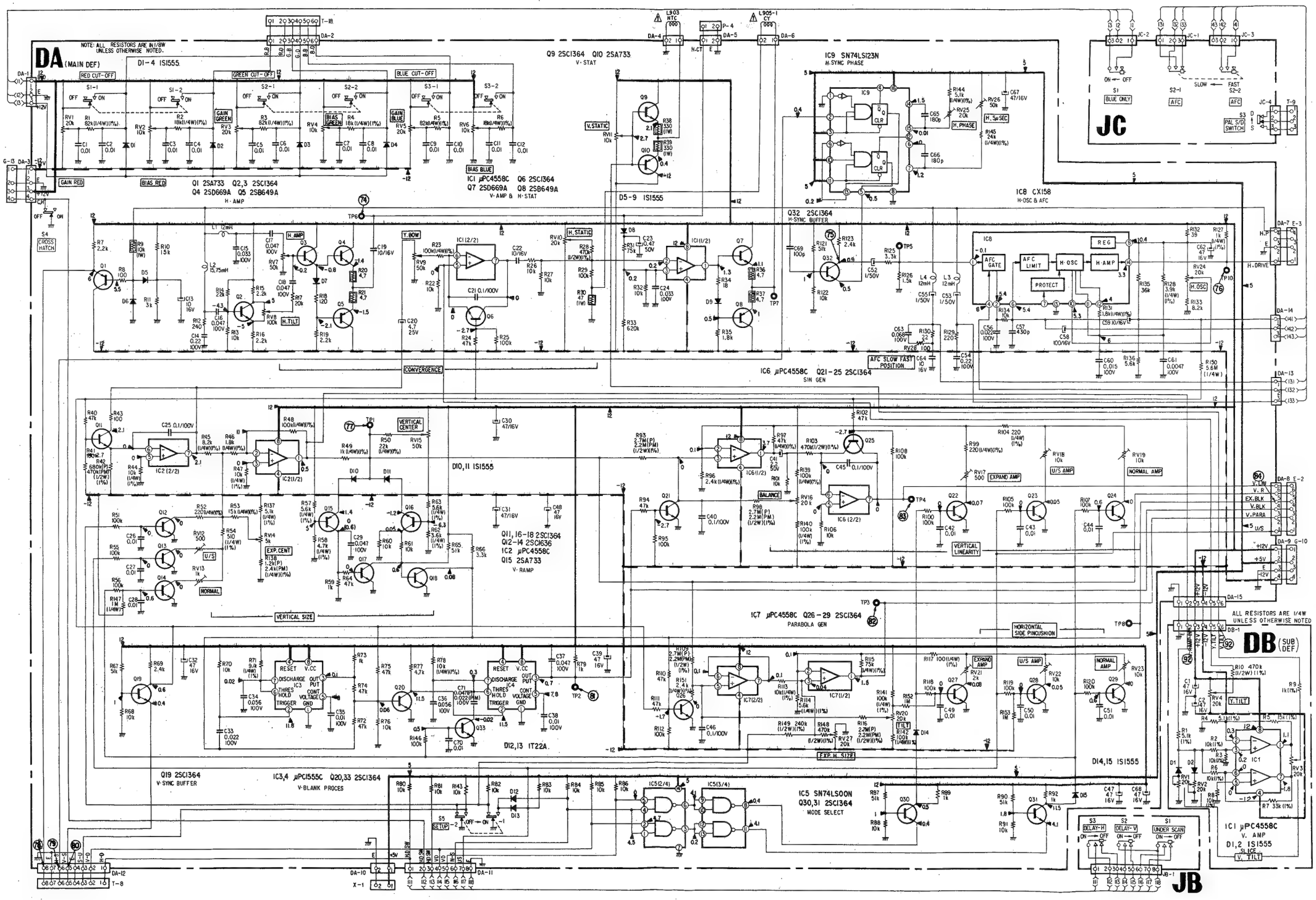
Q, IC	D	ADJ
33		
		RV1, RV2
		RV16,17,18,19
22 23 24	1,2,15	
		RV3, RV4
27, 28, 29	3,4,14	
		RV20,21,22,23
		RV5, RV6
21, 25		
		RV27
30, 26 IC5, IC6 12, IC7	13,12	
31		
		RV15,12,13
13,14 IC4, IC3, 16	10,11	
20, 15, IC2		RV14
18, 10, 9		
19 11 6		RV25
1, IC9, 17		RV26
32		RV7,8,9,11
	6,5	
2 IC1		
3,4		RV24
	7	RV10
IC8,5,7	9	RV28
8	8	
Q, IC	D	ADJ



Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

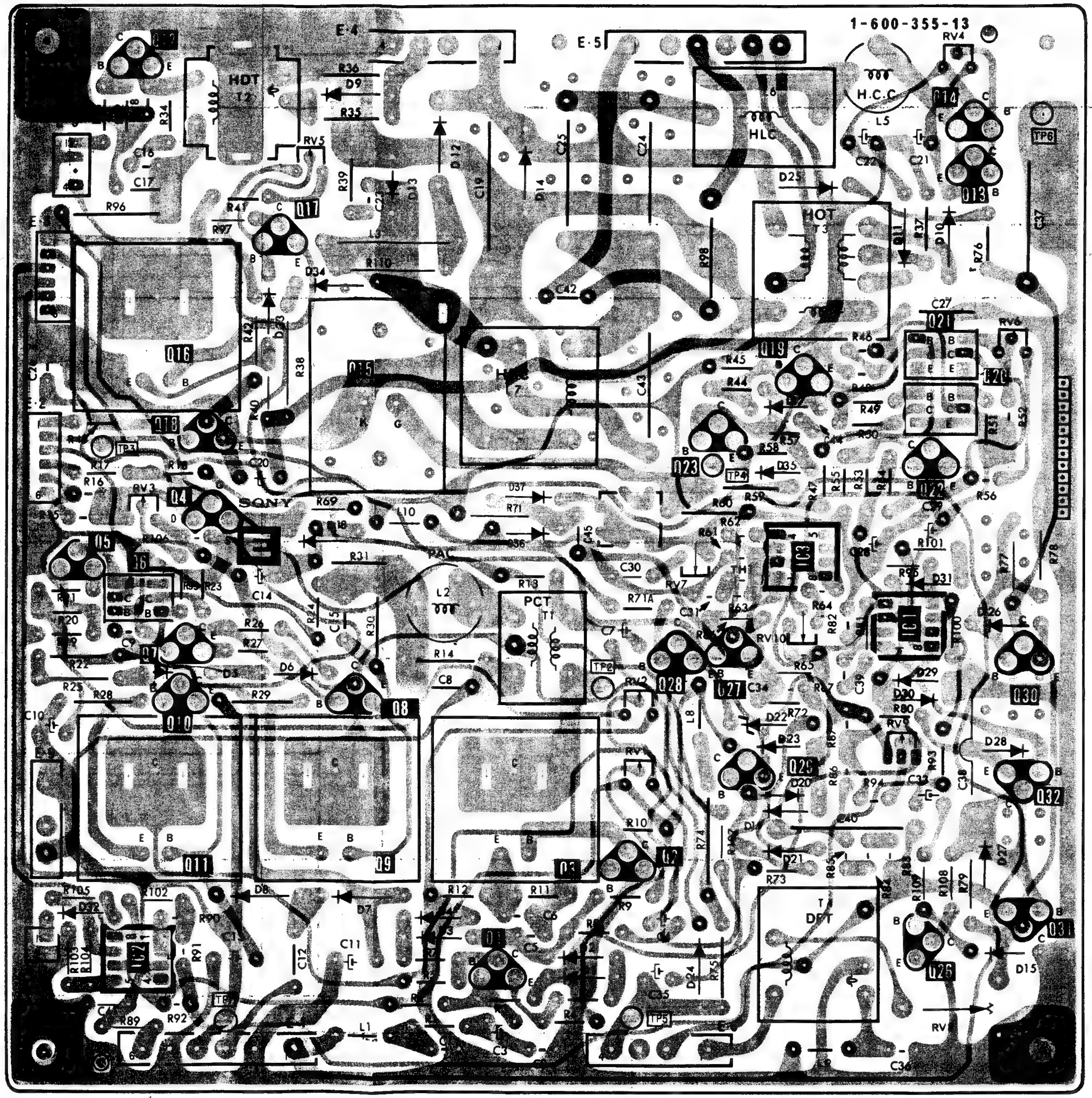
DA, DB, JB AND JC BOARDS

ALL RESISTORS ARE 1/8W UNLESS OTHERWISE NOTED.
SEE PAGE 6-1 FOR OTHER NOTES.



E BOARD

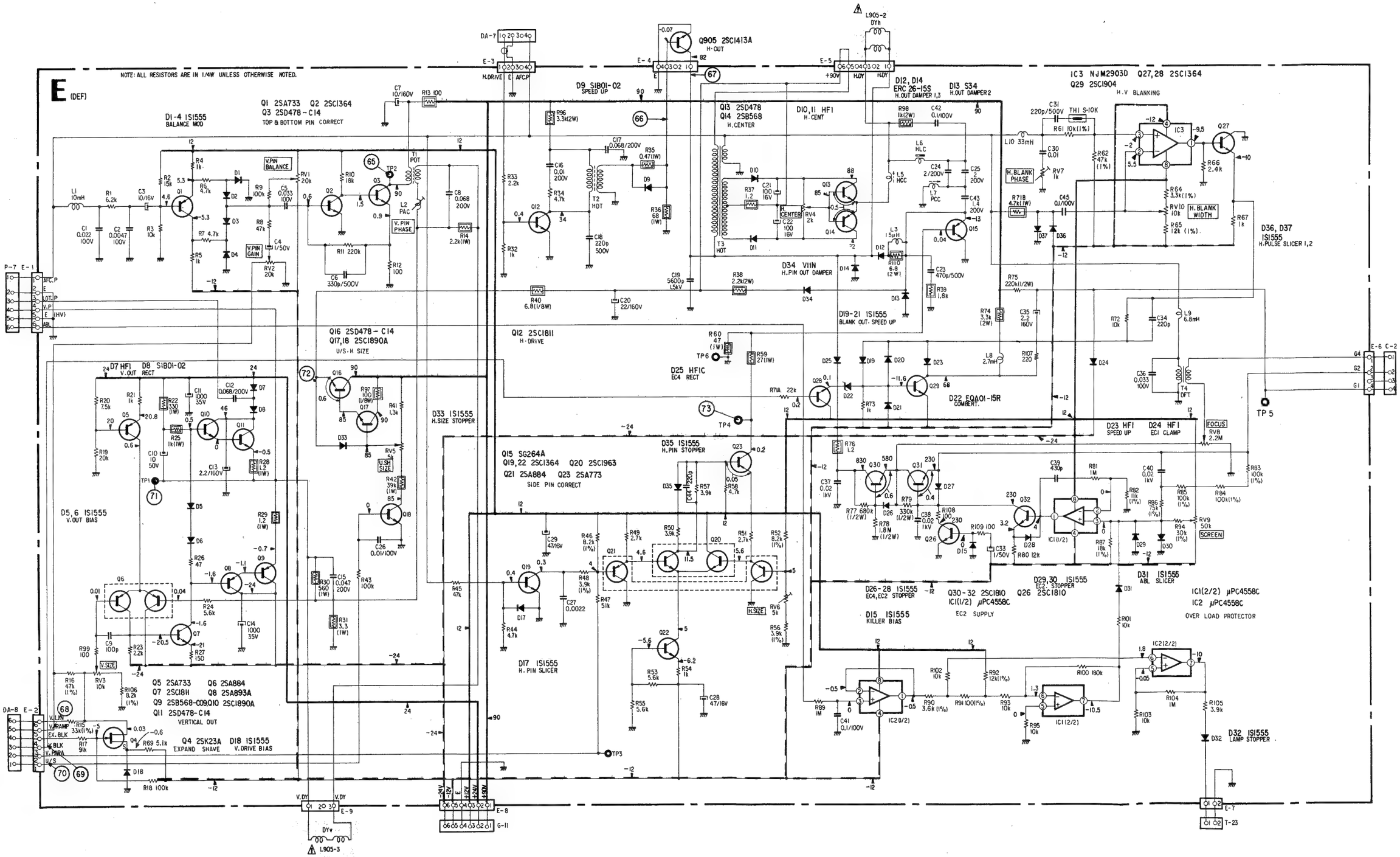
Q,IC	D	ADJ
12		RV4
14	9	
	12	
13	14	RV5
	13 25	
17	10 11	
	33 34	
16,15		
21		RV6
19		
20	17	
18 23		
22		
	35	
	37	
4		RV3
	18 36	
5 IC3		
6	31	RV7
IC1	26	
		RV10
7 30		
28,27	5 6 29	
10,8	30	RV2
	22	
	23,28	RV9
29,32		RV1
	20	
	19	
11 9 3		
	21 27	
2		
	8,7	
	32,4	
31	3,15	
26	2,24	
IC2 1	1	
		RV8
Q,IC	D	ADJ



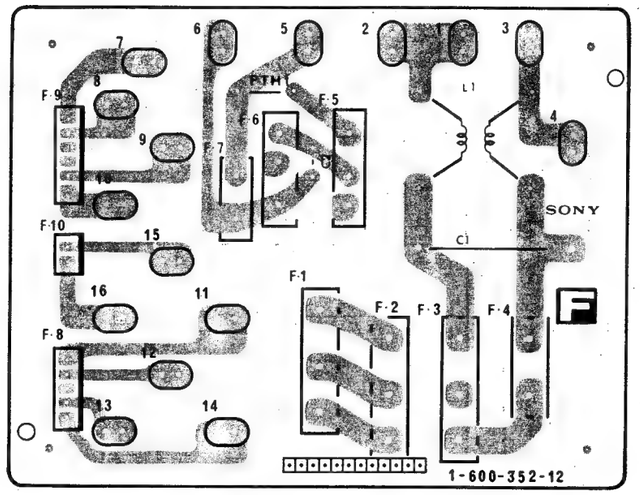
E BOARD

ALL RESISTORS ARE 1/4W UNLESS OTHERWISE NOTED.
SEE PAGE 6-1 FOR OTHER NOTES.

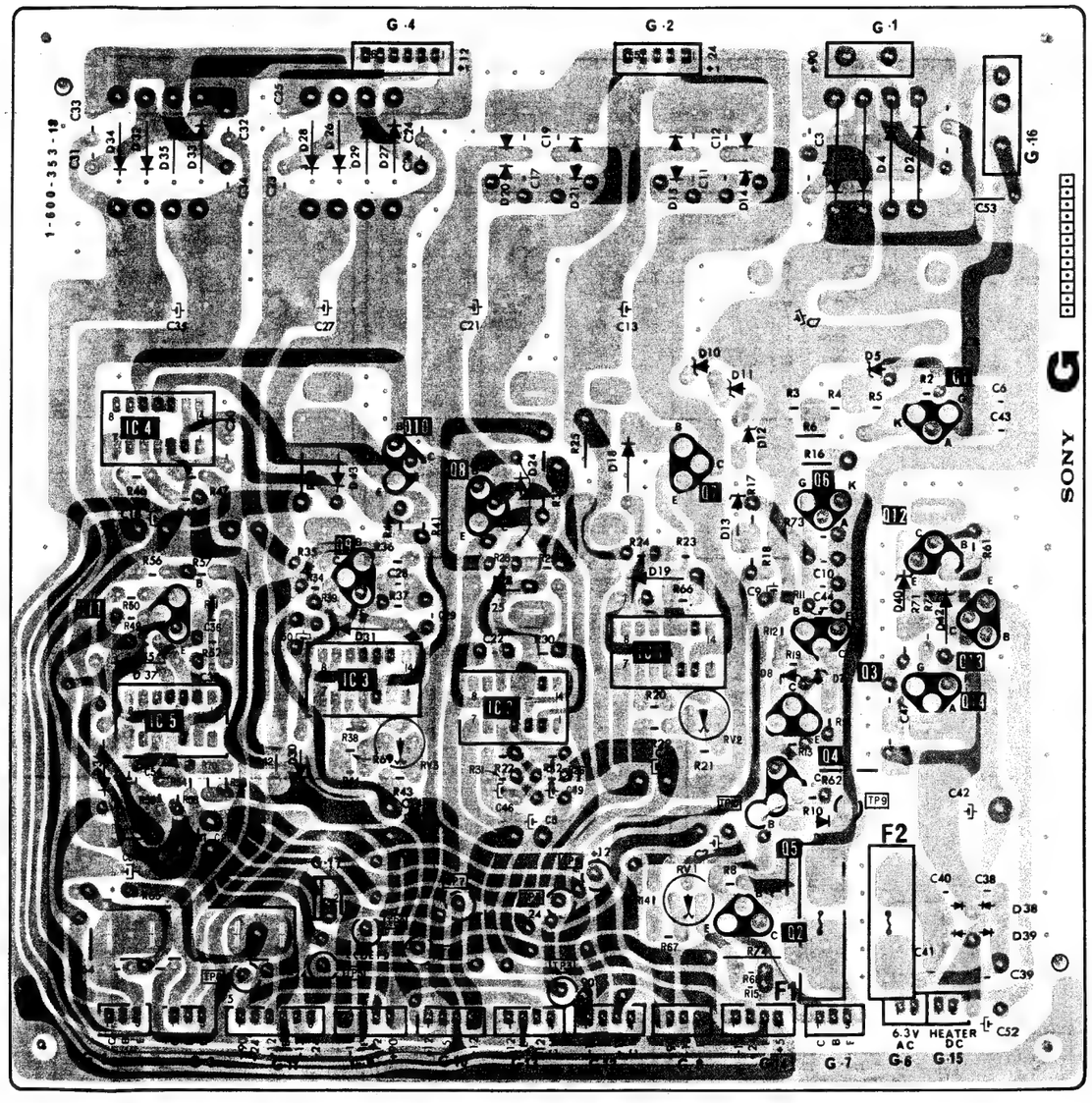
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.



F AND G BOARDS



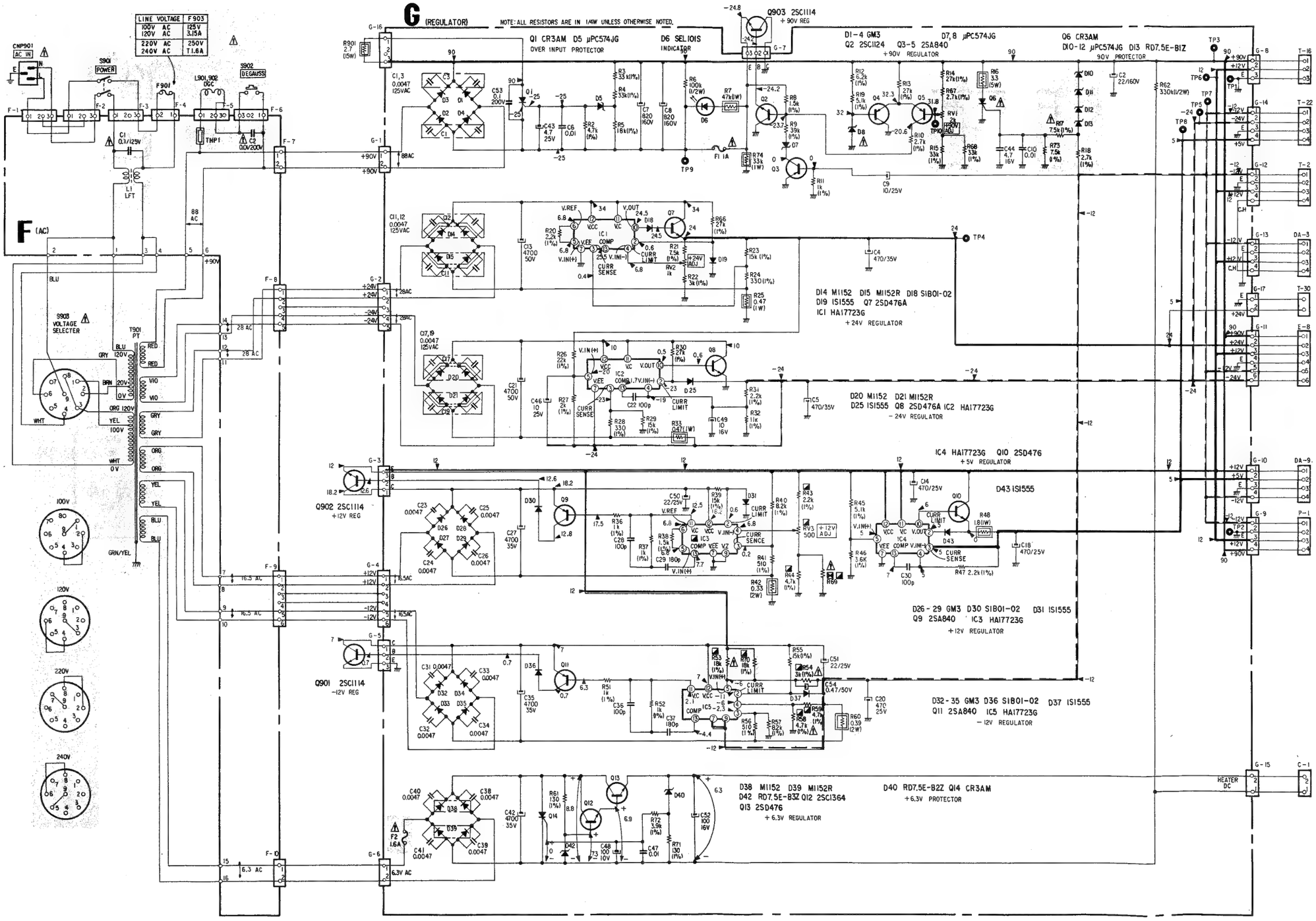
Q, IC	D	ADJ
	34,32,35,33 28,26,29,27 20,21,15,14 1,3,4,2	
	10 5 11	
IC4 1	12	
10 7	43 18	
8 6	13	
12		
9	25 19 40 42	
11 13		
IC1,3	31	
IC3 14 IC2	37 8,7	
IC5 4		RV2
		RV3
	36 30	
5	6	
2	38 39	RV1
Q, IC	D	ADJ



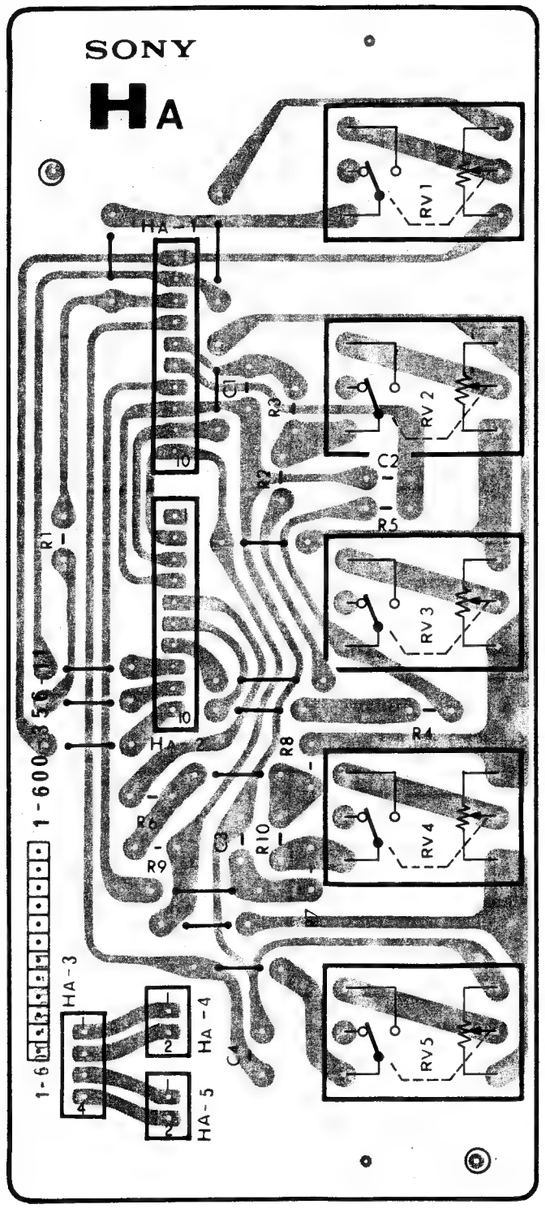
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

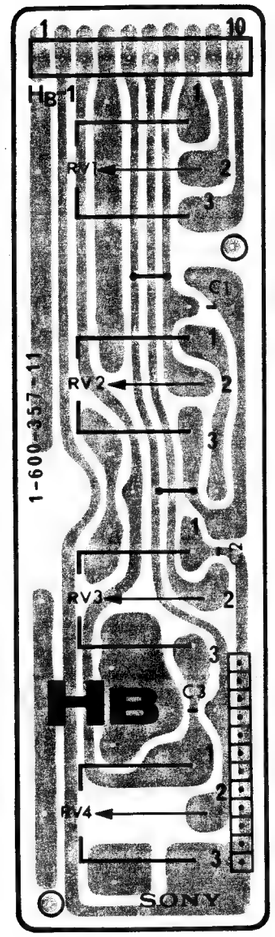
F AND G BOARDS

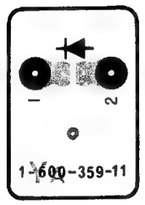
ALL RESISTORS ARE 1/4W UNLESS OTHERWISE NOTED.
SEE PAGE 6-1 FOR OTHER NOTES.

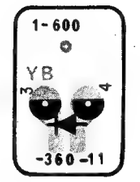


HA, HB, YA AND YB BOARDS



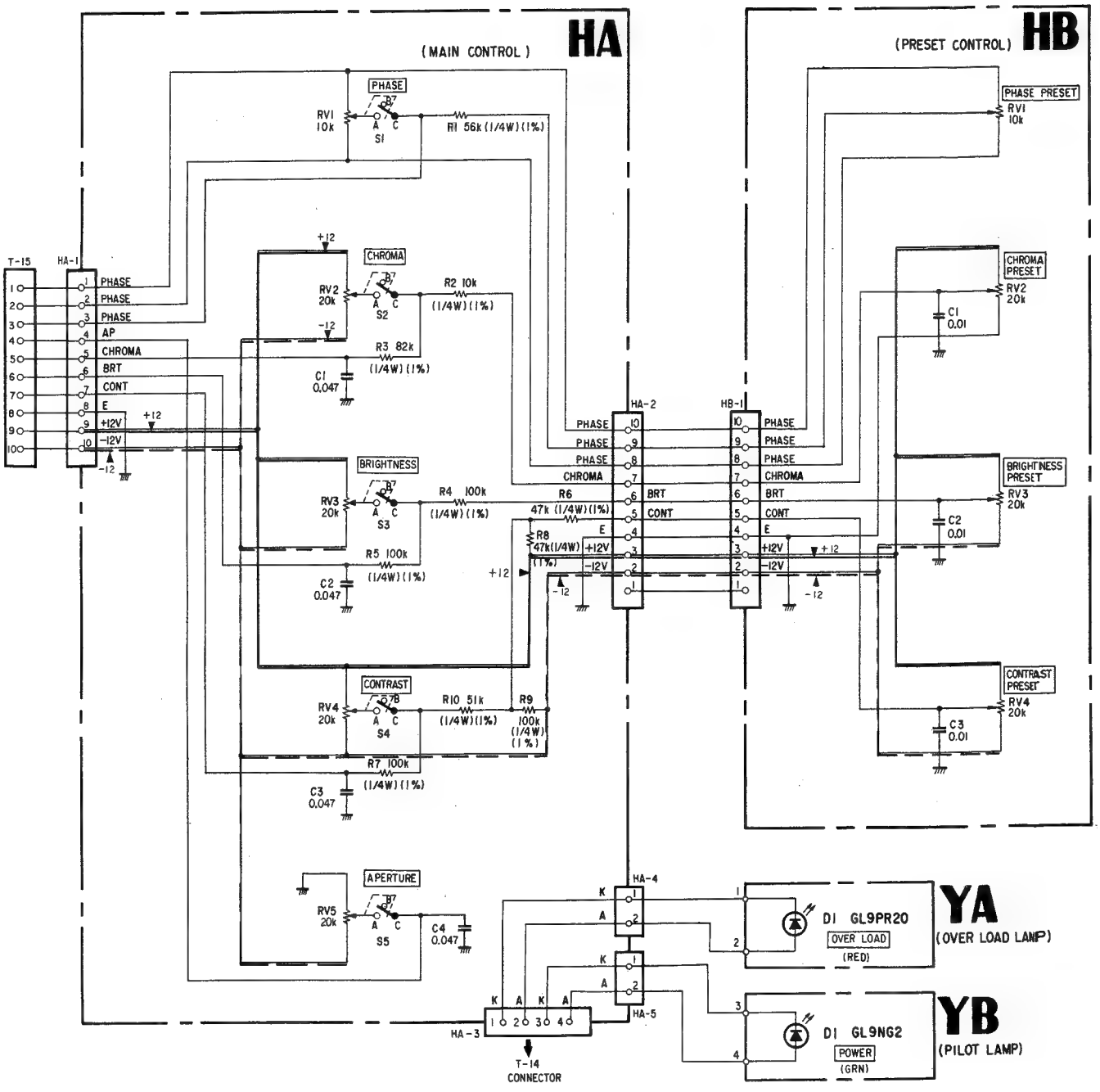




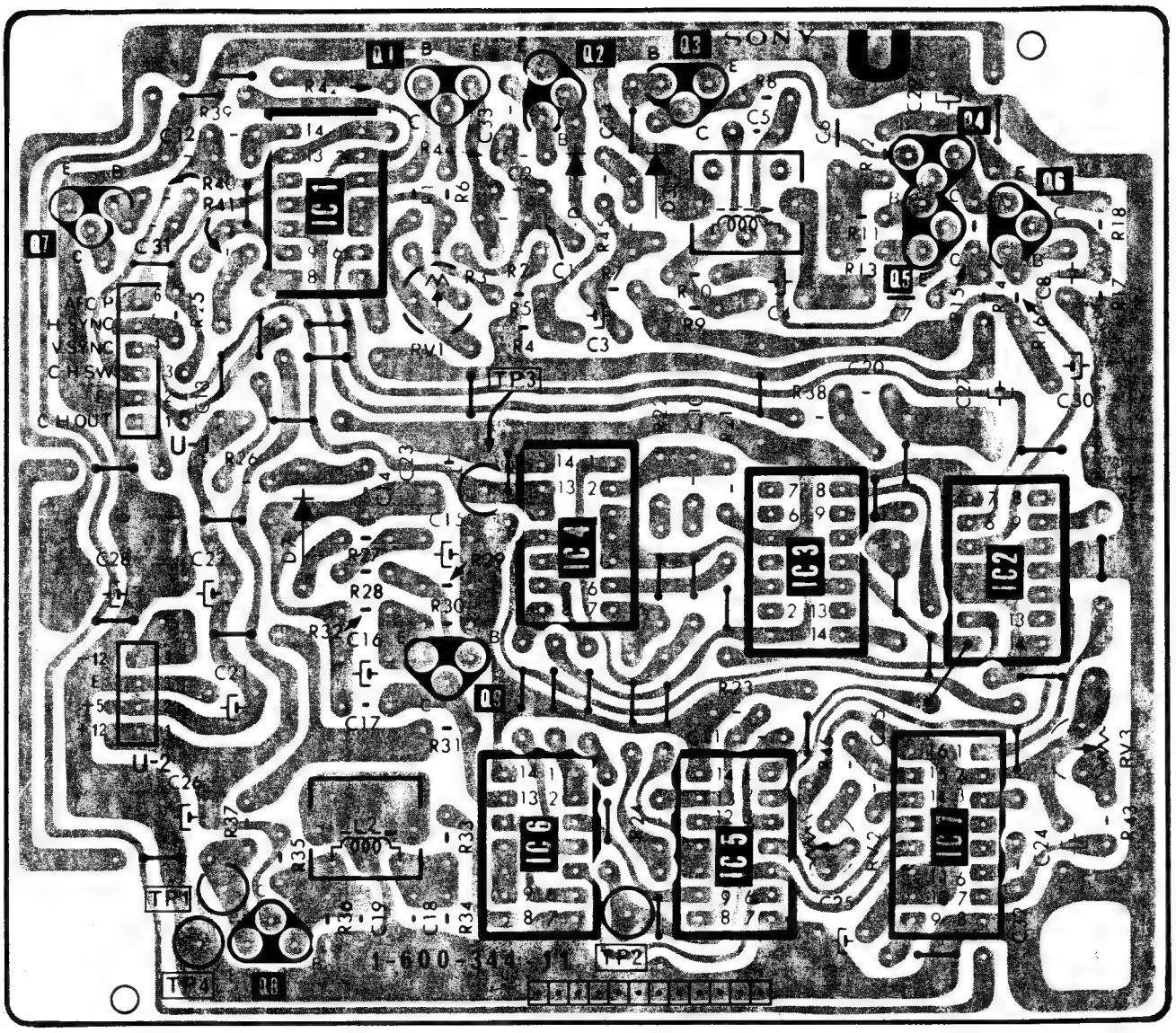


HA, HB, YA AND YB BOARDS

SEE PAGE 6-1 FOR OTHER NOTES.



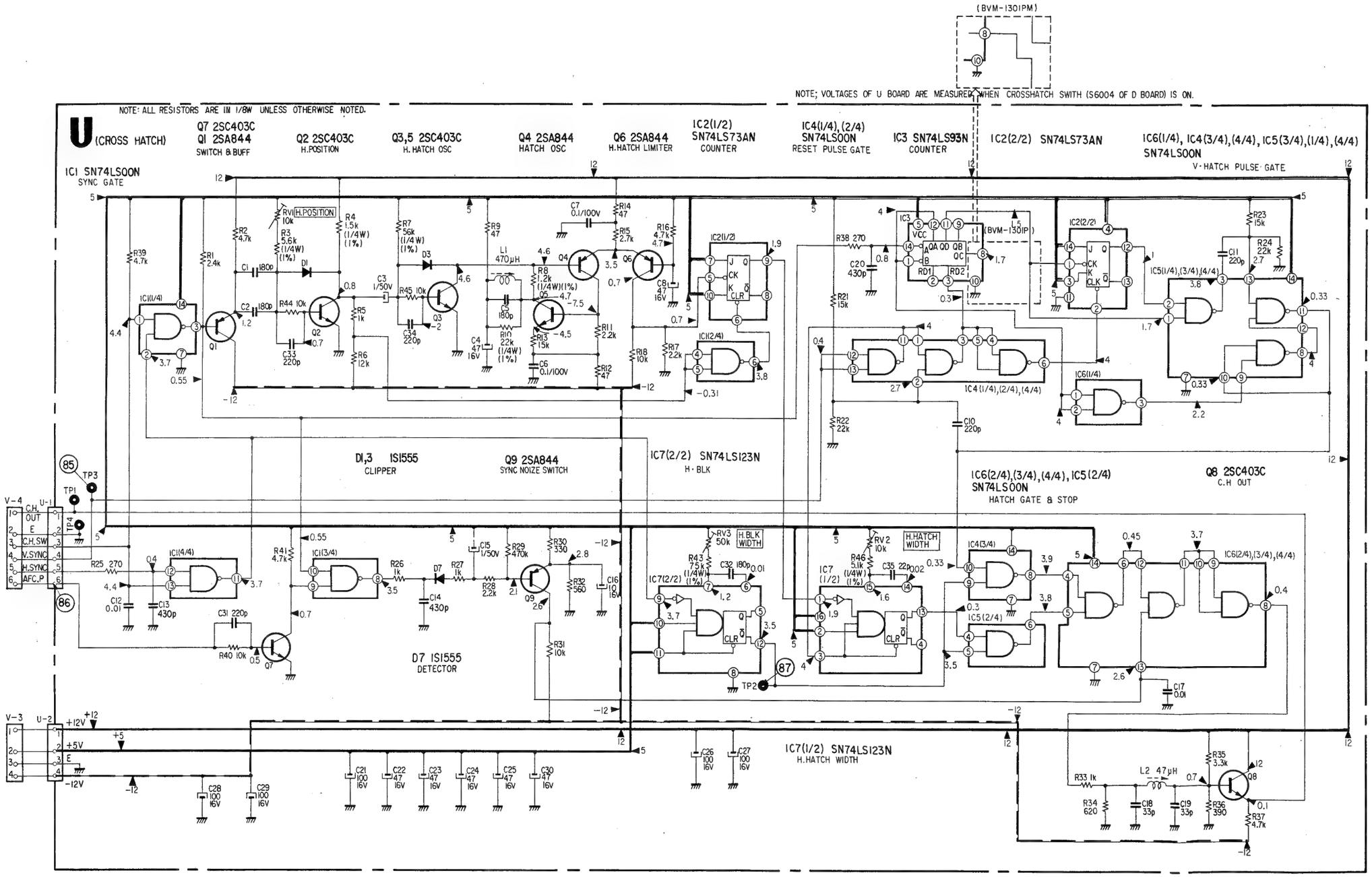
U BOARD



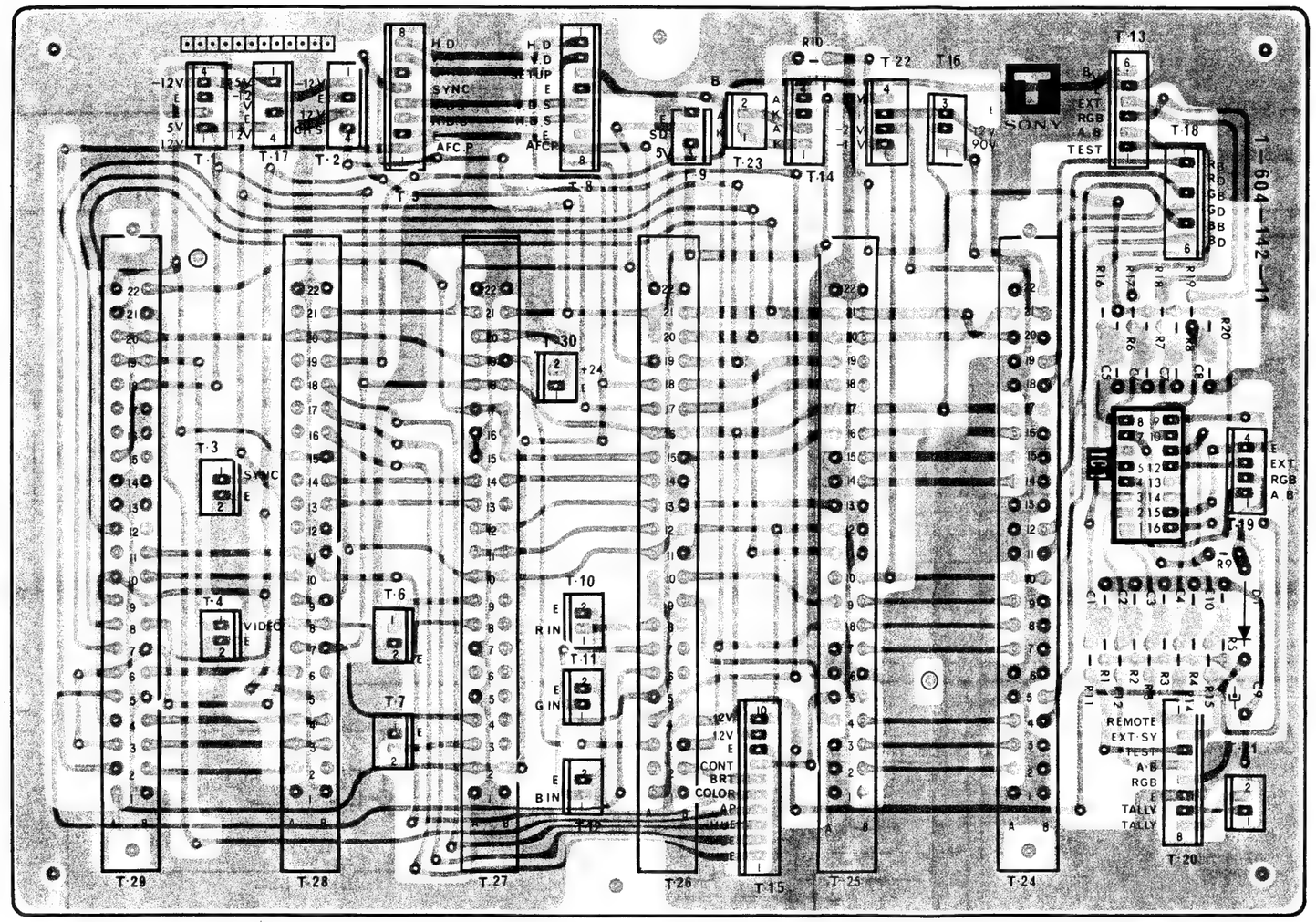
IC Q	7 IC1 1 2 3 5 4 6 9 IC4 IC3 IC2 8 IC6 IC5 IC7	IC Q
D	7 1 3	D
ADJ	RV1 RV2 RV3	ADJ

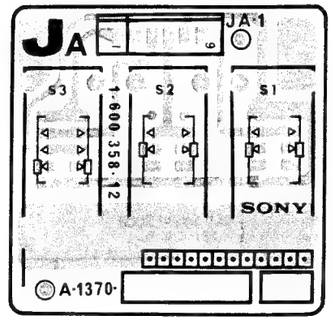
U BOARD

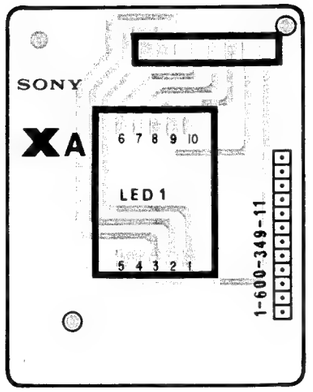
ALL RESISTORS ARE 1/8W UNLESS OTHERWISE NOTED.
SEE PAGE 6-1 FOR OTHER NOTES.

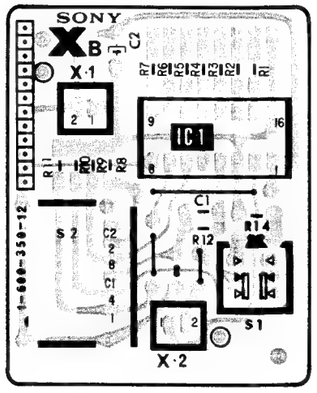


JA. T. XA AND XB BOARDS



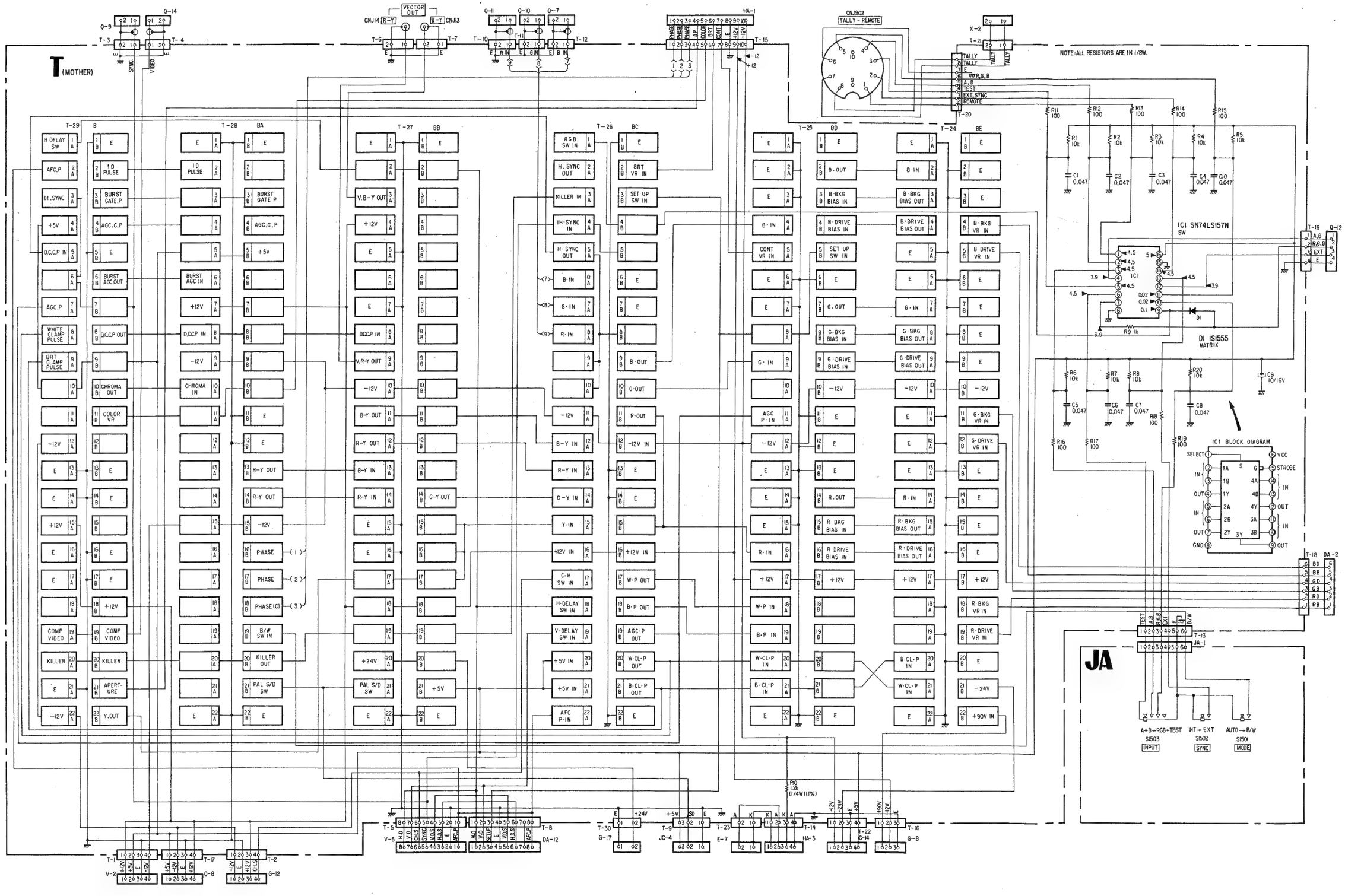


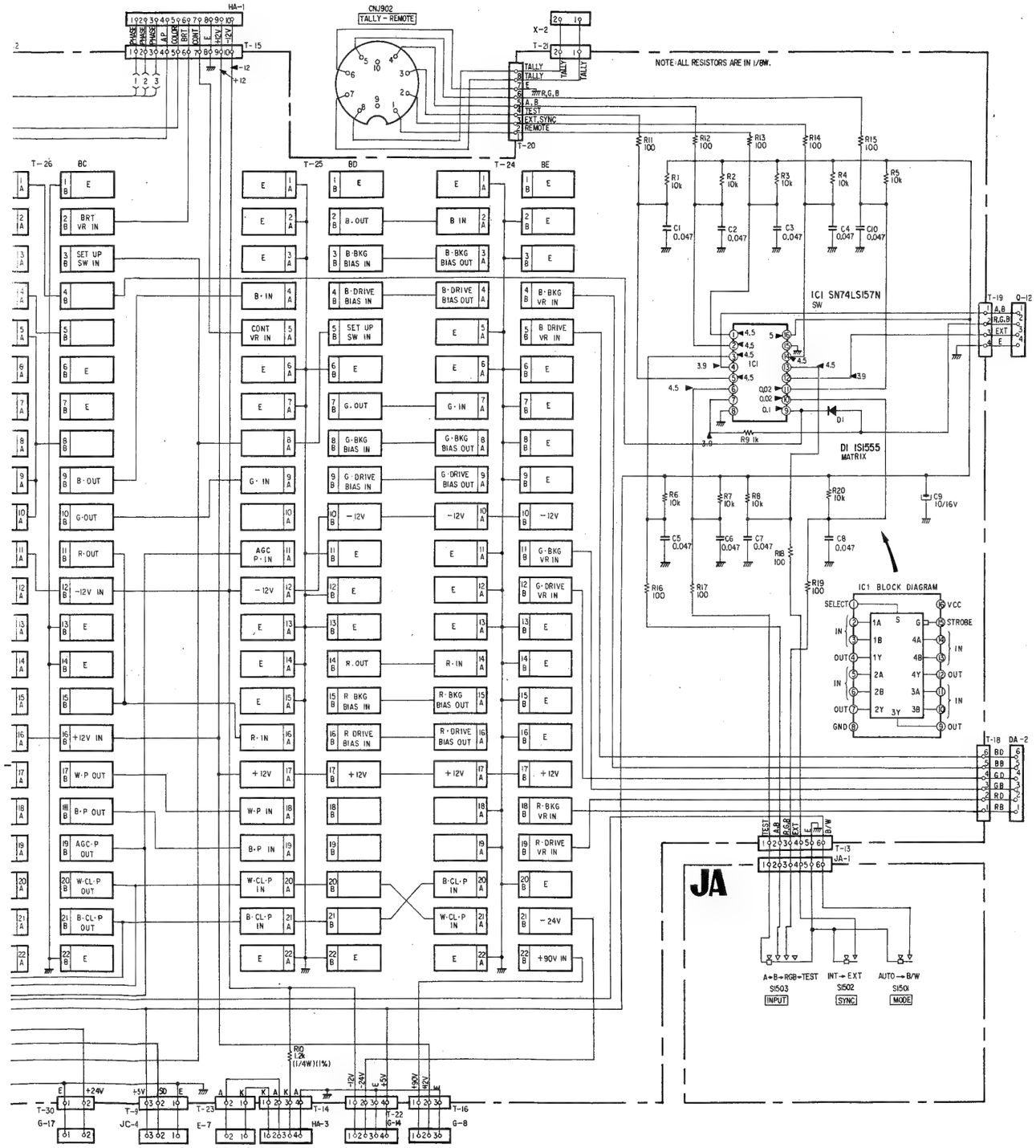


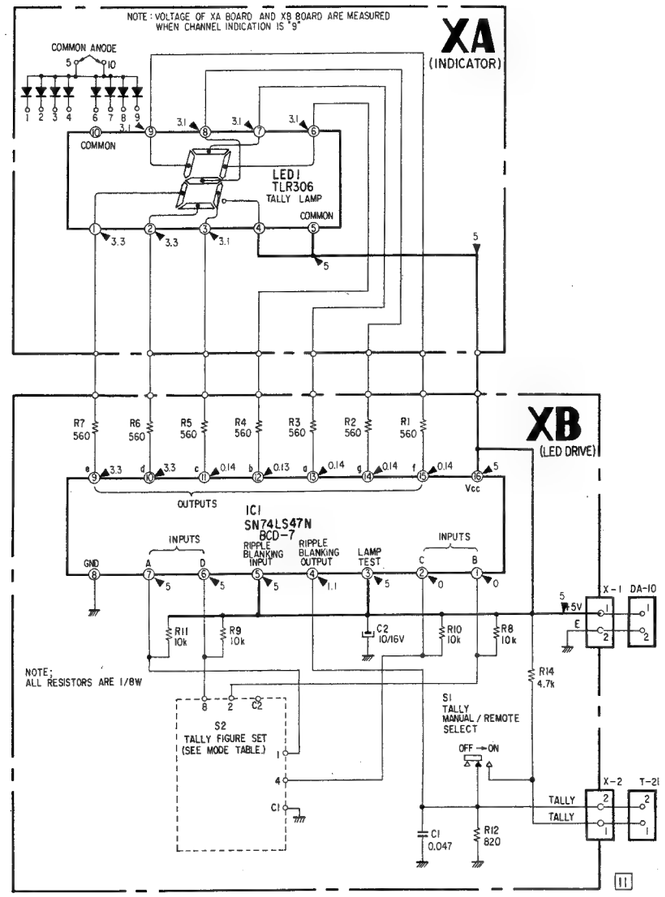


JA. T. XA AND XB BOARDS

ALL RESISTORS ARE 1/8W UNLESS OTHERWISE NOTED.
SEE PAGE 6-1 FOR OTHER NOTES.

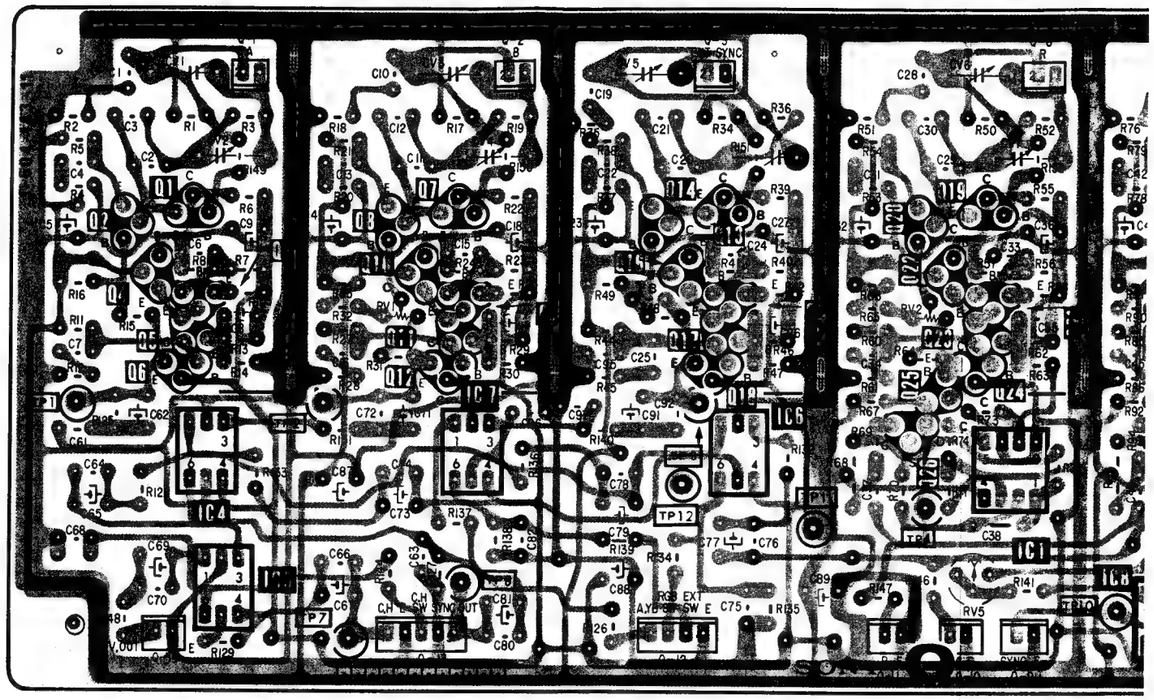



NOTE: ALL RESISTORS ARE IN 1/8W.
HA-1
CNJ902
TALLY - REMOTE
X-2
T-21
T-20
T-15
T-26
T-25
T-24
T-19
T-18
T-13
JA-1
IC1 SN74LS157N
SW
DI SI555
MATRIX
IC1 BLOCK DIAGRAM
JA
SI503
INPUT
SI502
SYNC
SI501
MODE
A→B→RGB→TEST
INT→EXT
AUTO→B/W
BRT VR IN
SET UP SW IN
B·OUT
G·OUT
R·OUT
-12V IN
+12V IN
W·P OUT
B·P OUT
AGC·P OUT
W·CL·P OUT
B·CL·P OUT
B·IN
G·IN
R·IN
AGC P·IN
B·BKG VR IN
G·BKG VR IN
R·BKG VR IN
B DRIVE VR IN
G·DRIVE VR IN
R·DRIVE VR IN
+90V IN
-24V
B IN
B·OUT
B·BKG BIAS IN
B·BKG BIAS OUT
B·DRIVE BIAS IN
B·DRIVE BIAS OUT
SET UP SW IN
G·IN
G·OUT
G·BKG BIAS IN
G·BKG BIAS OUT
G·DRIVE BIAS IN
G·DRIVE BIAS OUT
R·IN
R·OUT
R BKG BIAS IN
R·BKG BIAS OUT
R·DRIVE BIAS IN
R·DRIVE BIAS OUT
W·CL·P IN
B·CL·P IN
R0 1.2k (1/4W)(1%)
G-17
JC-4
E-7
HA-3
G-14
G-8


NOTE: VOLTAGE OF XA BOARD AND XB BOARD ARE MEASURED WHEN CHANNEL INDICATION IS "9"
XA
(INDICATOR)
COMMON ANODE
COMMON
LED1
TLR306
TALLY LAMP
XB
(LED DRIVE)
OUTPUTS
IC1
SN74LS47N
BCD-7
INPUTS
RIPPLE BLANKING INPUT
RIPPLE BLANKING OUTPUT
LAMP TEST
GND
Vcc
NOTE:
ALL RESISTORS ARE 1/8W
S2
TALLY FIGURE SET
(SEE MODE TABLE)
S1
TALLY
MANUAL / REMOTE
SELECT
OFF→ON
X-1
DA-10
X-2
T-21
TALLY
TALLY

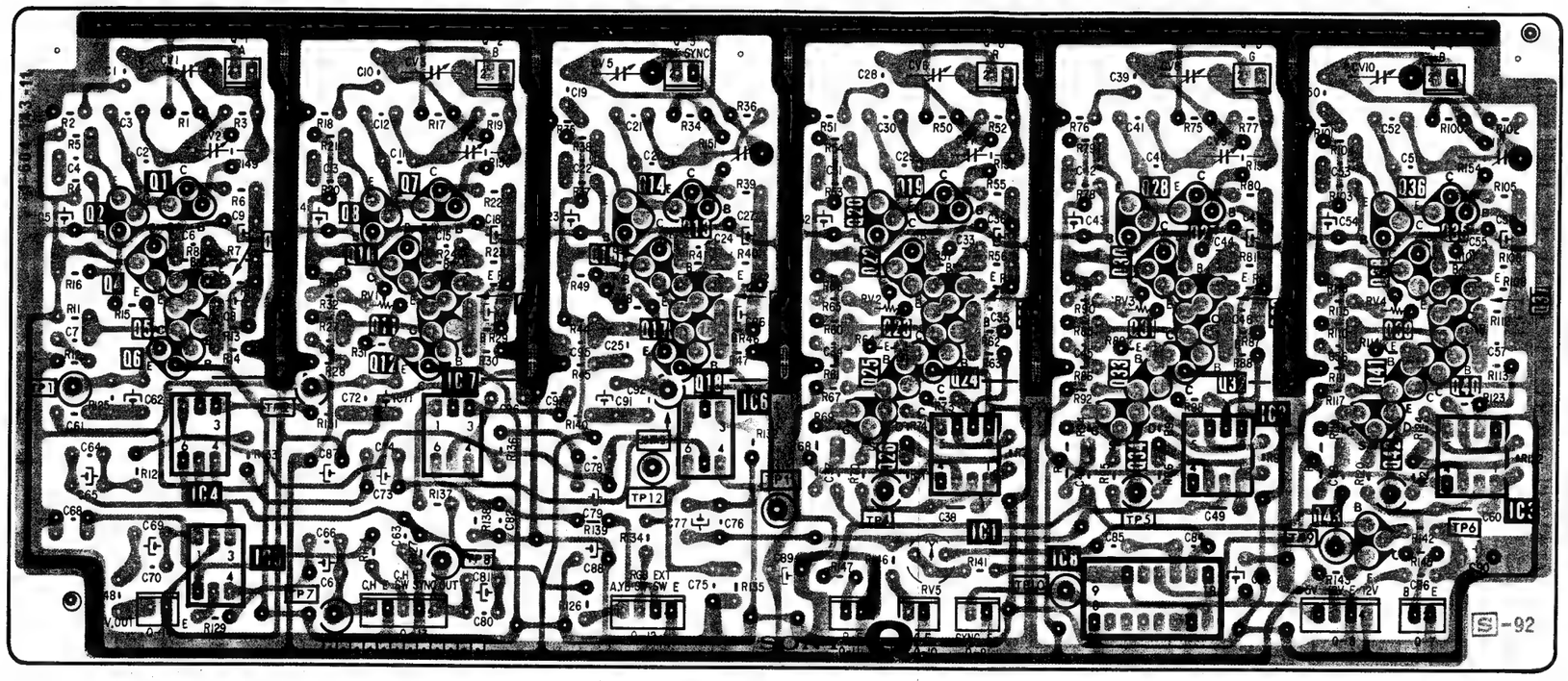
Q, W Q, W

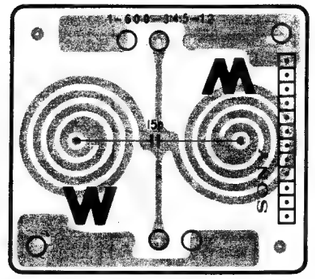
Q AND W BOARDS



Q																									
IC			2	4	1 3 5 6 IC 4 IC 5				7 8	10	9 11 12 IC 7				13 14	16	15 17 18 IC 8				20	19 22	21 23 25	24 26	IC 1
ADJ				CV1	CV2					CV3	CV4 RV1				CV5							CV6	CV7 RV2	RV5	

Q AND W BOARDS





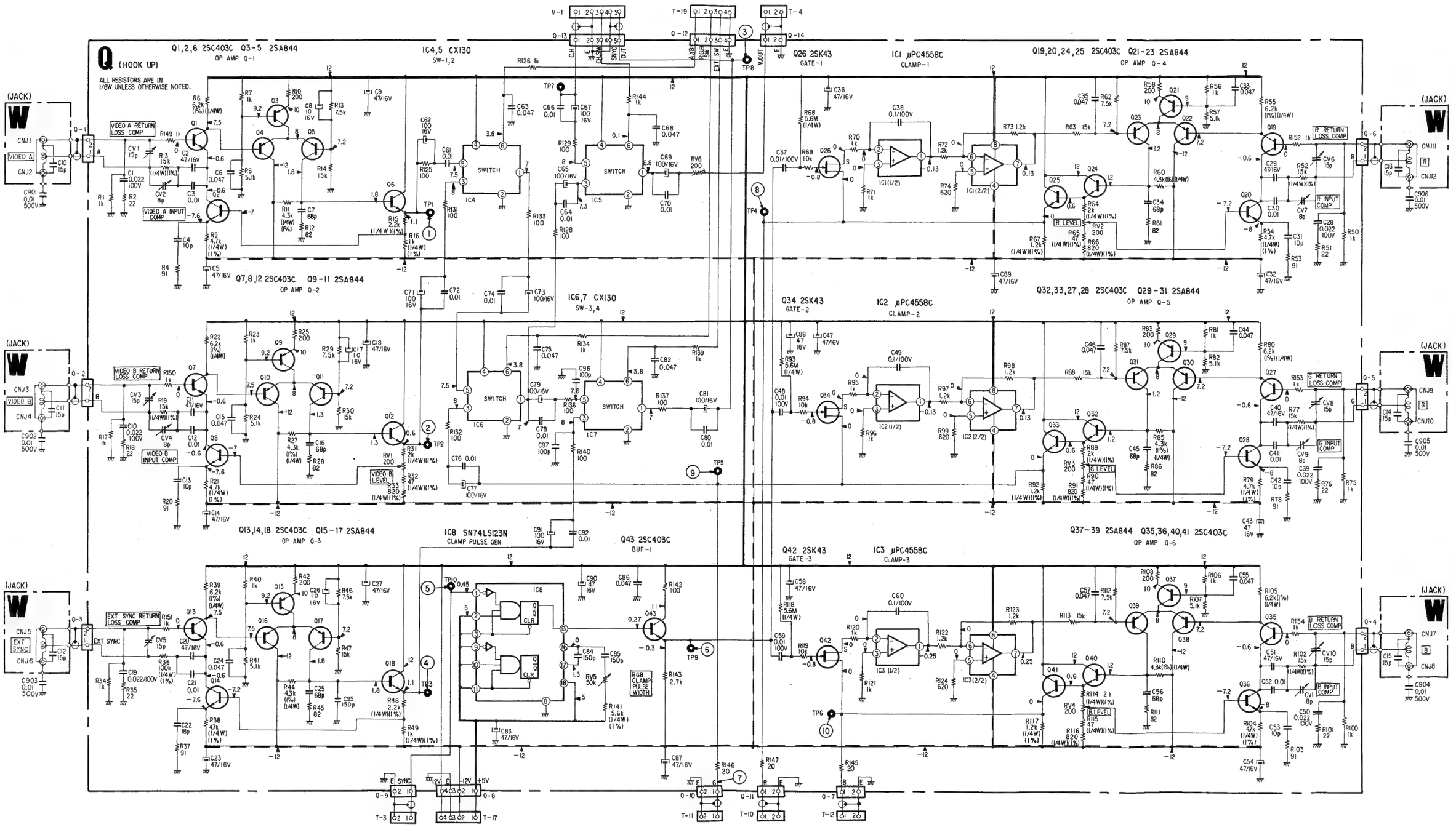
Q	1 2 3 4 5 6	7 8 9 10 11 12
IC	IC4 IC5	IC7
ADJ	CV1 CV2	CV3 CV4 RV1

Q	13 14 15 16 17 18	19 20 21 22 23 24 25 26
IC	IC6	IC1
ADJ	CV5	CV6 CV7 RV2 RV5

Q	27 28 29 30 31 32 33 34	35 36 37 38 39 40 41 42 43
IC	IC2 IC8	IC3
ADJ	CV8,CV9 RV3	CV10 CV11 RV4

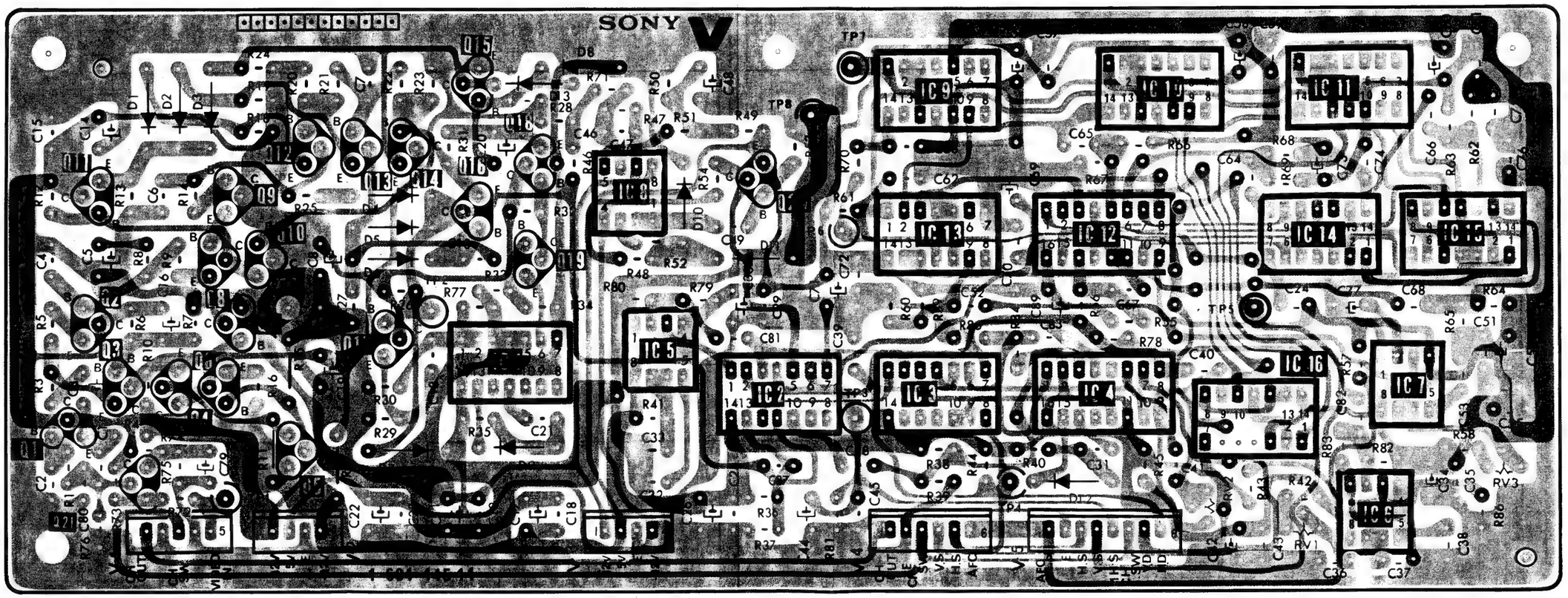
Q AND W BOARDS

ALL RESISTORS ARE 1/8W UNLESS OTHERWISE NOTED.
SEE PAGE 6-1 FOR OTHER NOTES.



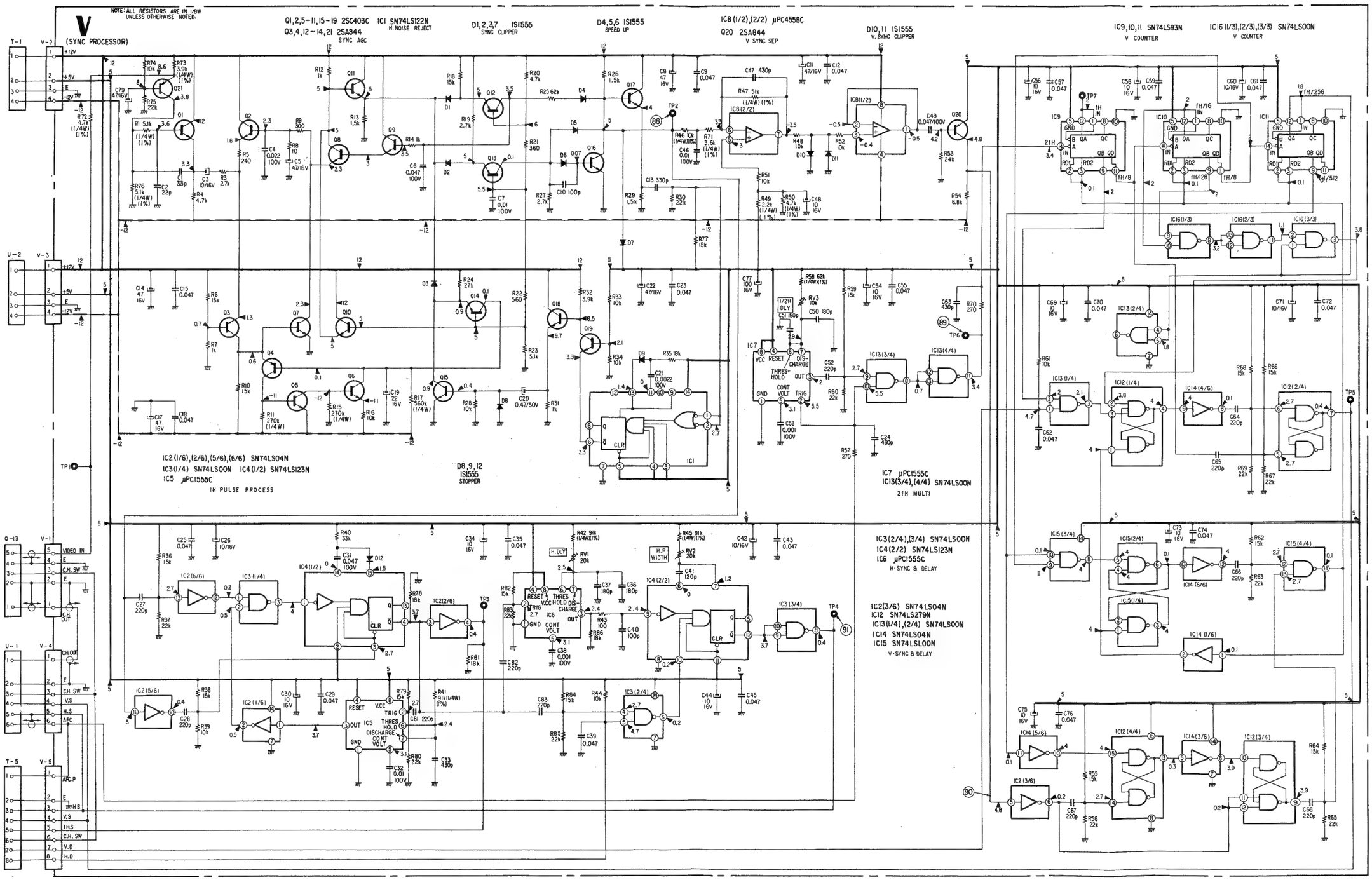
V BOARD (FOR BVM-1301P)

Q IC	1 2 3 21 4 6 7 8 9 10 5 12 13 17 14 16 15 18 19 IC1 IC8 IC5 20 IC2 IC9 IC13 IC3 IC12 IC4 IC10 IC16 IC11 IC14 IC6 IC7 IC15	Q IC
D	1 2 3 4 5 6 7 9 13 8 10 11 12	D
ADJ	RV2 RV1 RV3	ADJ



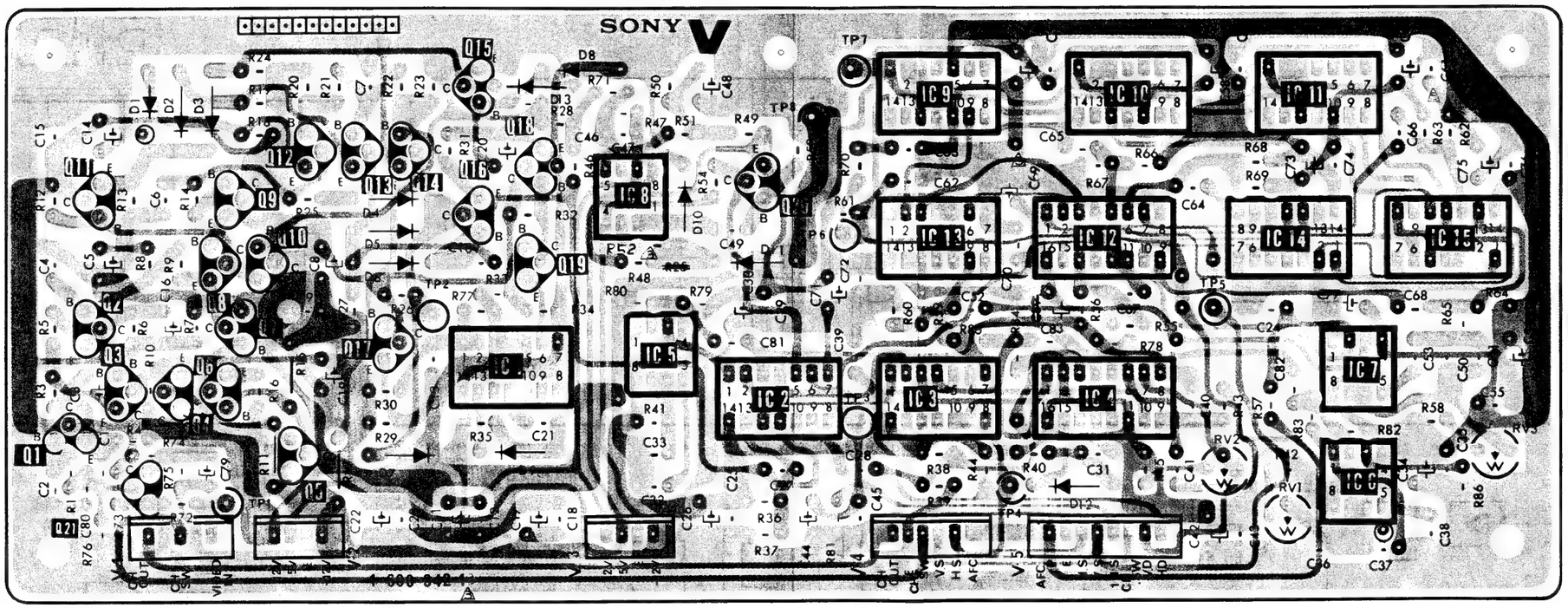
V BOARD (FOR BVM-1301P)

ALL RESISTORS ARE 1/8W UNLESS OTHERWISE NOTED.
SEE PAGE 6-1 FOR OTHER NOTES.

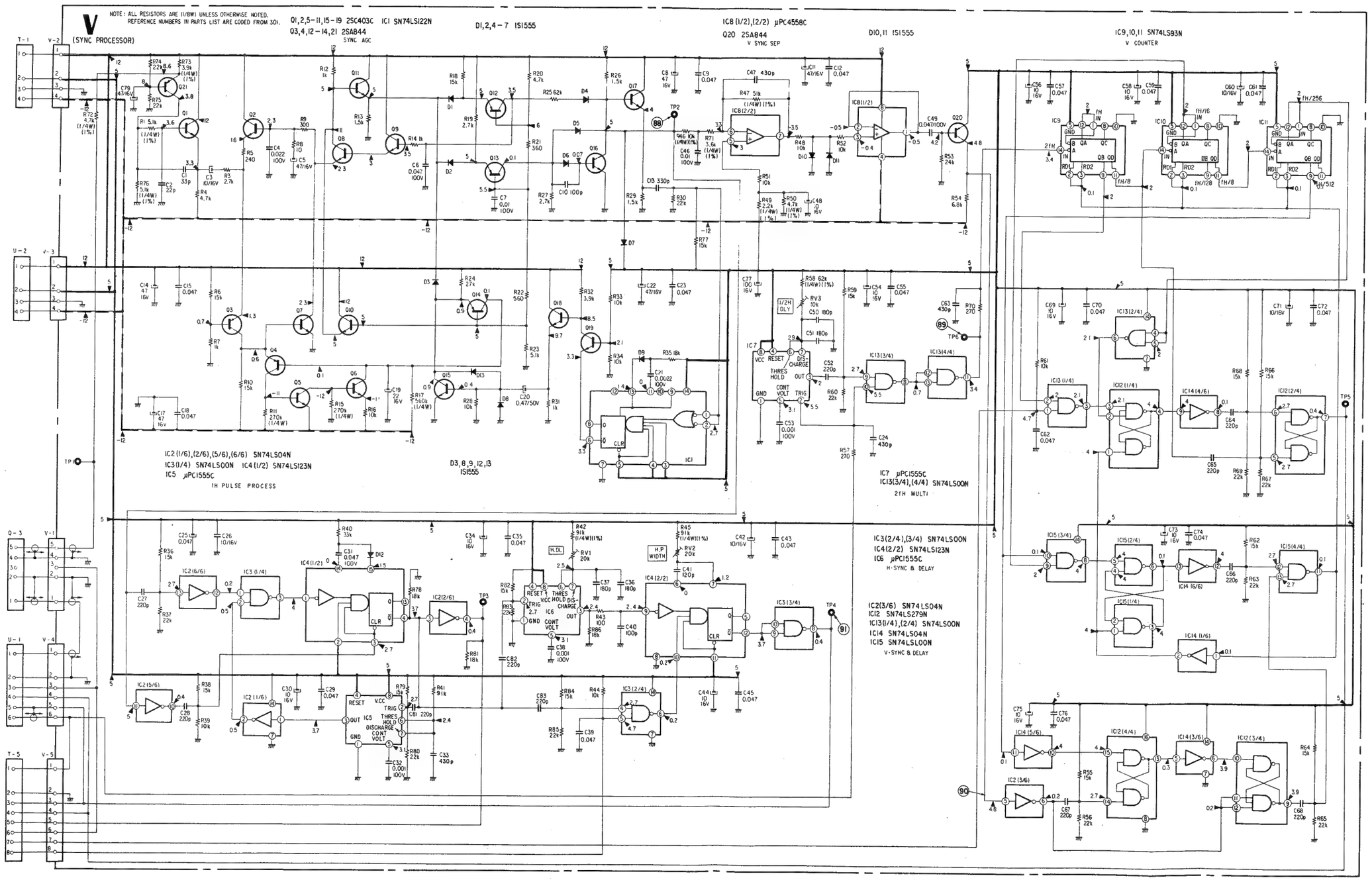


V BOARD (FOR BVM-1301PM)

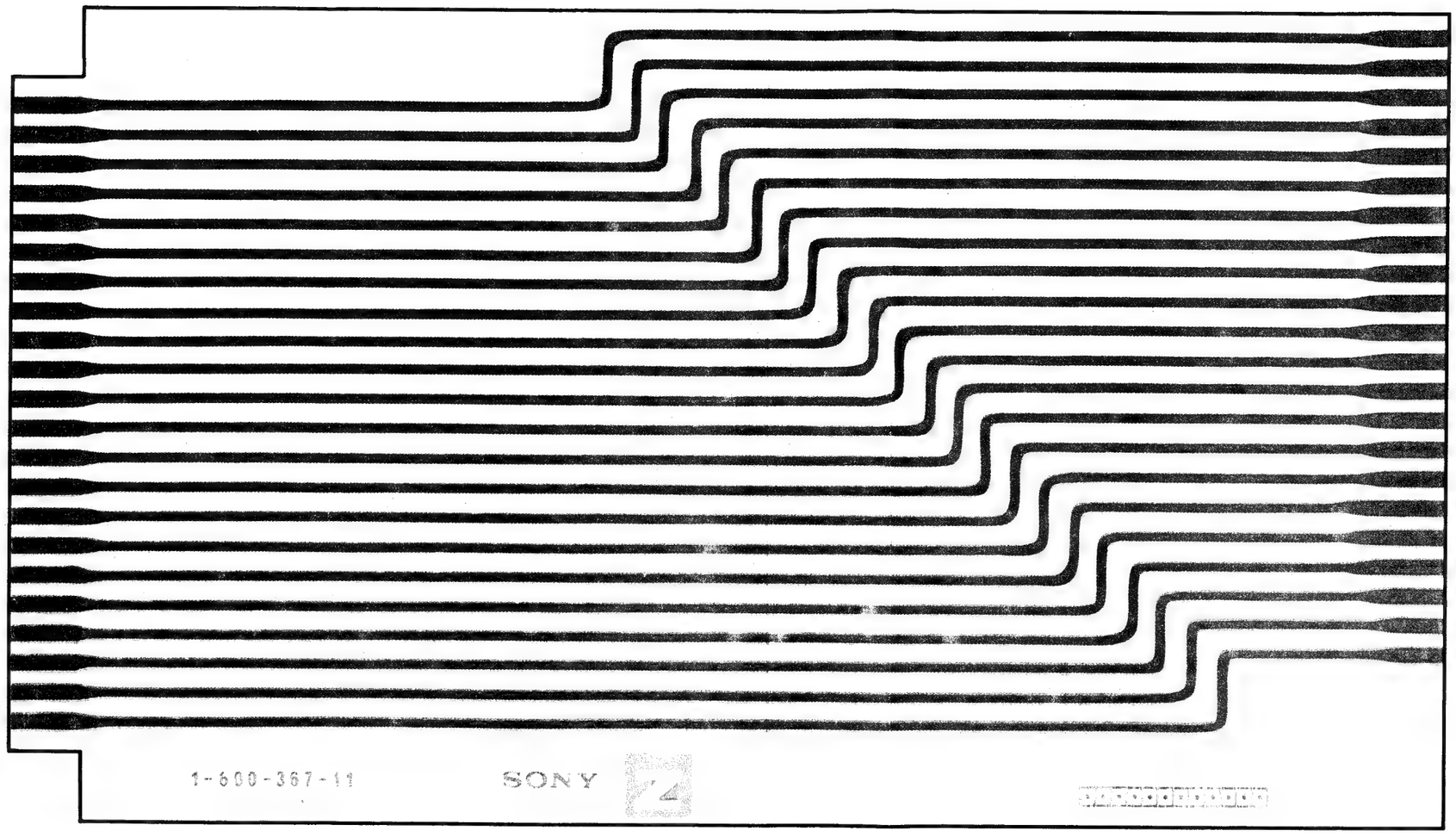
Q IC	1 2 3 21 4 6 8 9 7 10 5 12 13 17 14 15 16 18 19 IC1 IC8 IC5 20 IC2 IC9 IC13 IC3 IC12 IC4 IC10 IC16 IC11 IC14 IC7 IC6 IC15	Q IC
D	1 2 3 4 5 6 7 9 13 8 10 11 12	D
ADJ	RV2 RV1 RV3	ADJ



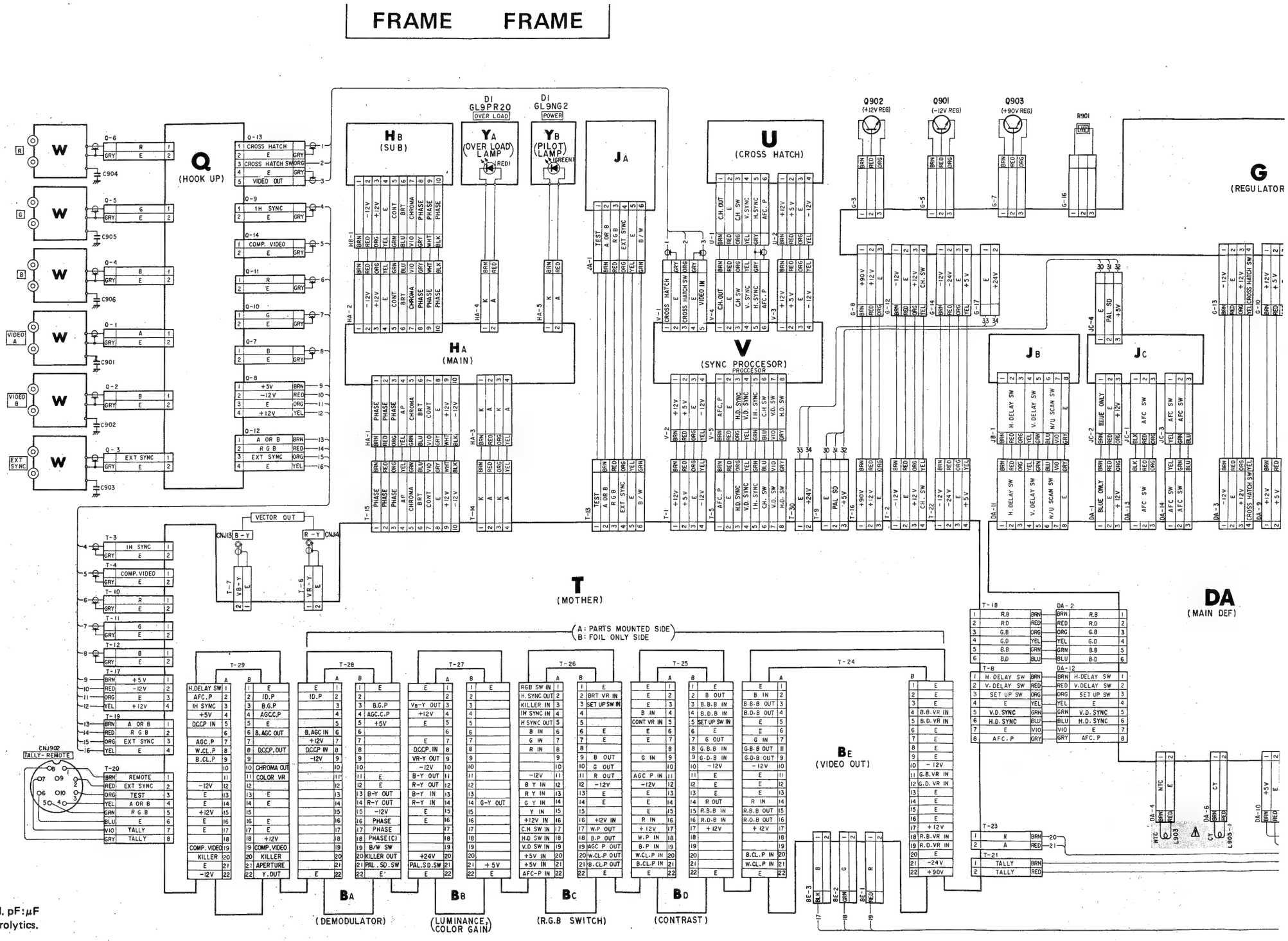
V BOARD (FOR BVM-1301PM)



Z BOARD



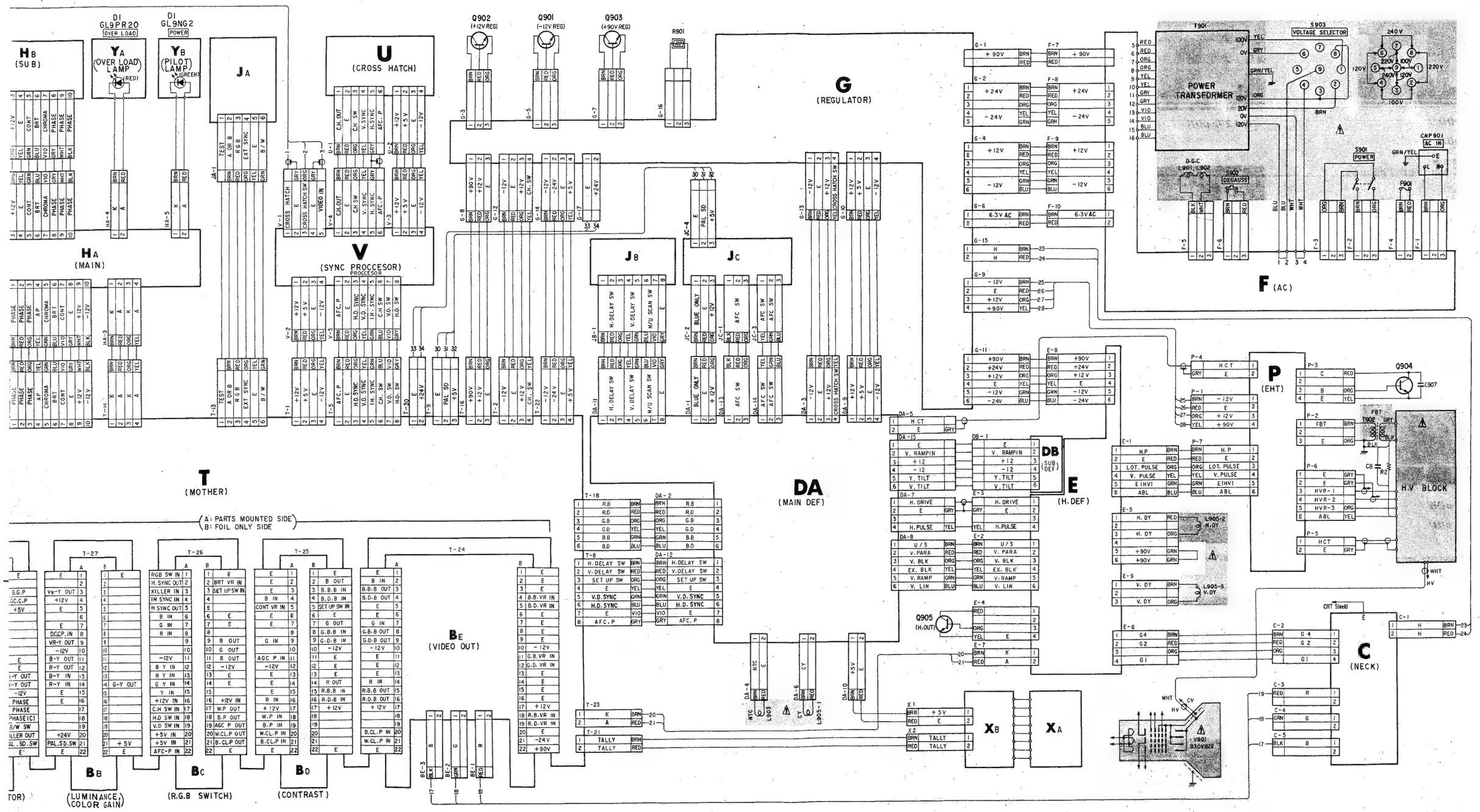
6-2. FRAME WIRING DIAGRAM



Note:

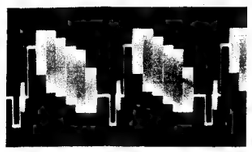
- All capacitors are in μF unless otherwise noted. pF:μF 50 WV or less are not indicated except for electrolytics.
- All resistors are in ohms, ¼ W unless otherwise noted. kΩ : 1000 Ω; MΩ : 1000 kΩ
- ⏚ : direct connection to points marked ⏚ on the chassis
- ▭ : panel designation.

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.



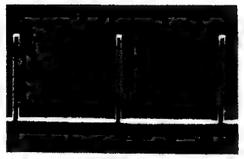
nd mark ⚠
part number

6-3. WAVEFORMS

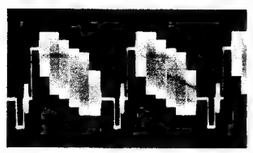


(1) 1Vp-p(H)
(2) 1Vp-p(H)
(3) 0.9Vp-p(H)
SYNC switch is INT position.

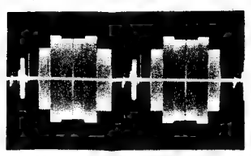
0.3Vp-p(H)
(3) Composite sync signal input
and SYNC switch is EXT position.
(4) 0.3Vp-p(H)
Composite sync signal input



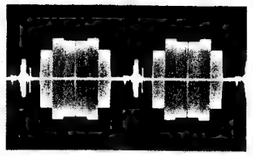
(5) 3.2Vp-p(H)
(6) 4.0Vp-p(H)



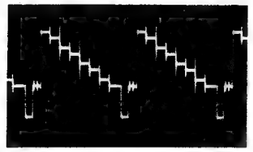
(7) 0.9Vp-p(H)
(8) 1Vp-p(H)
(9) 1Vp-p(H)
(10) 1Vp-p(H)



(11) 0.56Vp-p(H)

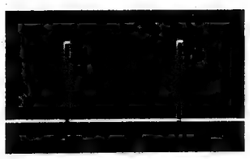


(12) 0.2Vp-p(H)

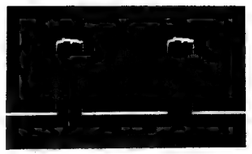


(13) 1.7Vp-p(H)

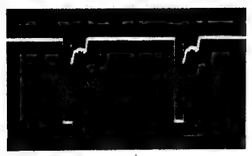
(14) 0.95Vp-p(H)



(15) 4.2Vp-p(H)

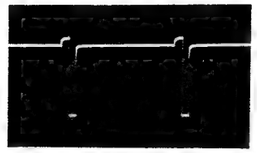


(16) 4.4Vp-p(H)



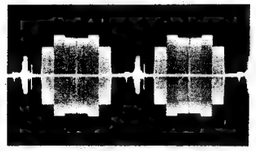
(17) 5.2Vp-p(H)

(18) 4.2Vp-p(H)

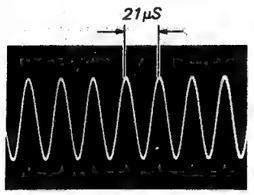


(19) 4.8Vp-p(H)

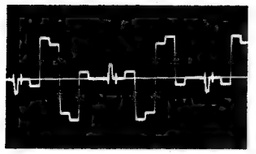
(20) 4.2Vp-p(H)



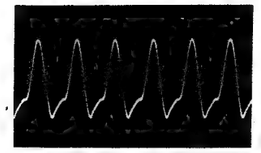
(21) 0.2Vp-p(H)



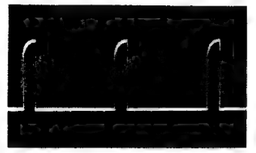
(22) 1.2Vp-p(4.43MHz)



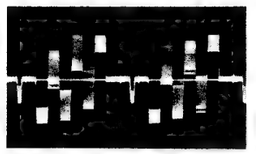
(23) 3Vp-p(H)



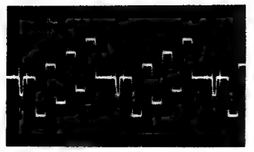
(24) 0.32Vp-p(4.43MHz)



(25) 4Vp-p(H)

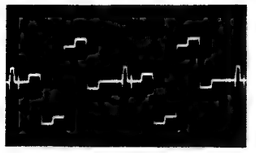


(26) 2Vp-p(H)



(27) 0.9Vp-p(H)

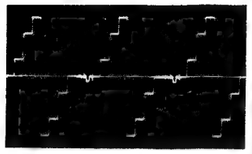
(28) 2.3Vp-p(H)



(29) 1Vp-p(H)

(30) 0.22Vp-p (H)
(31) 0.64Vp-p (H)
(32) 1.5Vp-p (H)

(33) 0.24Vp-p (H)
(34) 0.68Vp-p (H)
(35) 1.9Vp-p (H)



(36) 0.88Vp-p (H)

(38) 0.7Vp-p(H)

(39) 0.86Vp-p(H)

(40) 0.72Vp-p(H)

(41) 0.76Vp-p(H)

(42) 0.92Vp-p(H)

(43) 0.72Vp-p(H)

(44) 5.2Vp-p

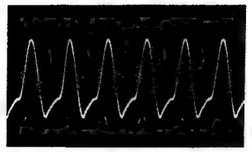
(45) 4Vp-p

(46) 7.5Vp-p

(47) 4.4Vp-p

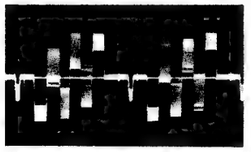
(48) 7.8Vp-p

(49) 1.1Vp-p

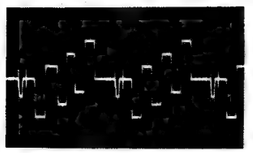


(24) 0.32Vp-p(4.43MHz)

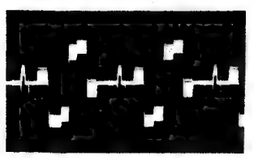
(25) 4Vp-p(H)



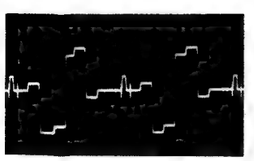
(26) 2Vp-p(H)



(27) 0.9Vp-p(H)



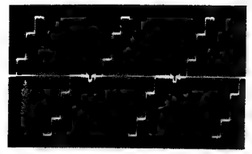
(28) 2.3Vp-p(H)



(29) 1Vp-p(H)

(30) 0.22Vp-p (H)
(31) 0.64Vp-p (H)
(32) 1.5Vp-p (H)

(33) 0.24Vp-p (H)
(34) 0.68Vp-p (H)
(35) 1.9Vp-p (H)



(36) 0.88Vp-p (H)

(37) 0.32Vp-p(H)

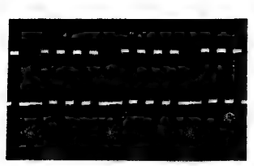
(38) 0.7Vp-p(H)

(39) 0.86Vp-p(H)

(40) 0.72Vp-p(H)

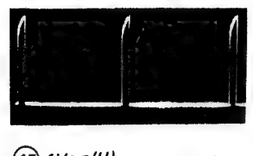
(41) 0.76Vp-p(H)

(42) 0.92Vp-p(H)

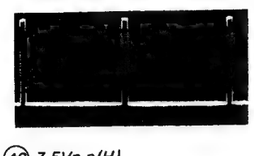


(43) 0.72Vp-p(H)

(44) 5.2Vp-p(H)



(45) 4Vp-p(H)



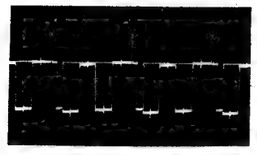
(46) 7.5Vp-p(H)

(47) 4.4Vp-p(H)

(48) 7.8Vp-p(H)

(49) 1.1Vp-p(H)

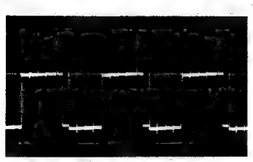
(50) 0.76Vp-p(H)



(51) 0.88Vp-p(H)

(52) 0.48Vp-p(H)

(53) 0.92Vp-p(H)



(54) 0.94Vp-p(H)

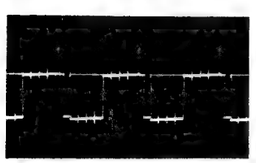
(55) 0.39Vp-p(H)

(56) 0.72Vp-p(H)

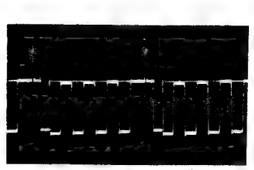
(57) 0.84Vp-p(H)

(58) 0.31Vp-p(H)

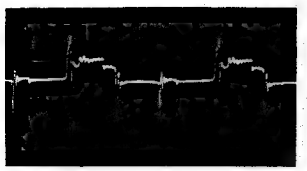
(59) 30Vp-p(H)



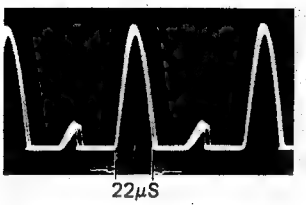
(60) 28Vp-p(H)



(61) 21.5Vp-p(H)

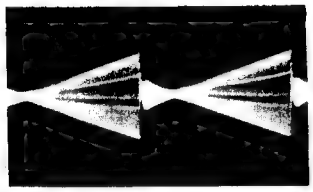


(62) 6.4Vp-p(H)



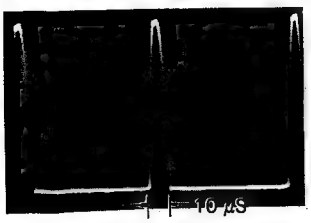
(63) 450Vp-p(H)

(64) 130Vp-p(H)

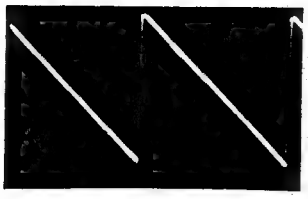


(65) 29Vp-p(V)

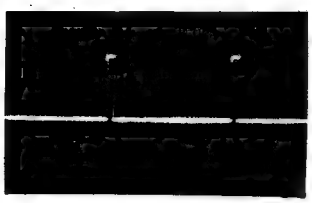
(66) 9.8Vp-p(H)



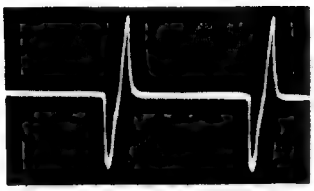
(67) 830Vp-p(H)



(68) 10.8Vp-p(V)

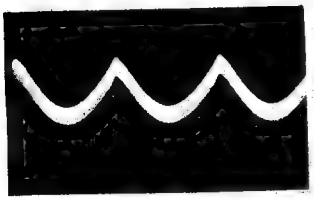


(69) 12Vp-p(V)

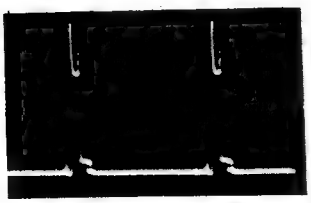


(70) 0.3Vp-p(H)
UNDER SCAN switch is ON.

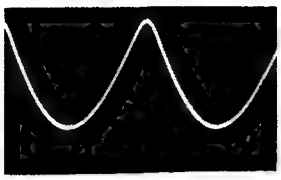
(71) 100Vp-p(V)



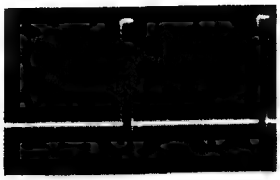
(72) 0.64Vp-p(V)



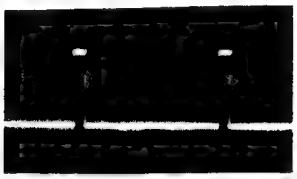
(73) 10Vp-p(H)



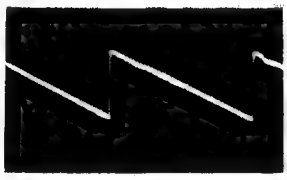
(74) 3.9Vp-p(H)



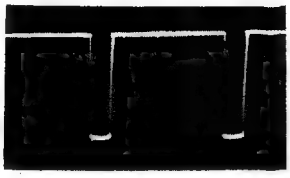
(75) 8Vp-p(H)



(76) 1.4Vp-p(H)



(77) 12.5Vp-p(H)



(78) 7.6Vp-p(H)

(79) 4.2Vp-p(H)

(80) 5.4Vp-p(V)

(85) 5.4Vp-p(V)

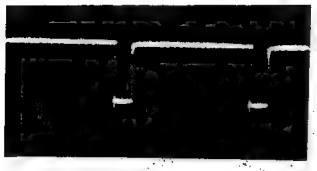
(90) 5.4Vp-p(V)

(81) 11.6Vp-p(V)

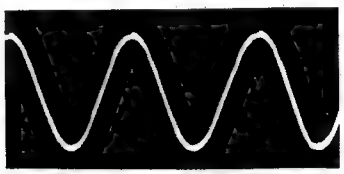
(86) 8.2Vp-p(H)

(91) 4Vp-p(H)

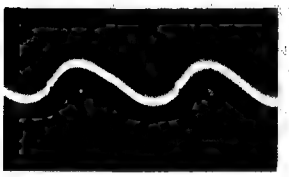
(82) 4.2Vp-p(V)



(87) 5Vp-p(H)
C.H. switch (S4 on D board) is ON.



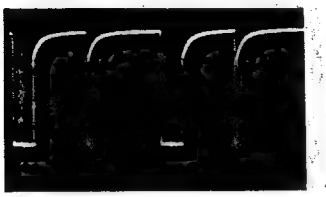
(92) 185Vp-p(V)



(83) 0.3Vp-p(V)

(88) 5.4Vp-p(H)

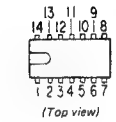
(84) 10.4Vp-p(V)
DELAY-V switch is ON.



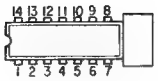
(89) 4.4Vp-p(H)

6-4. SEMICONDUCTORS

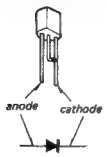
μA733CN



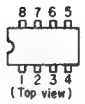
μPC562C



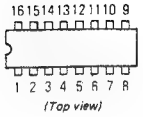
μPC574J
μPC574J-G



μPC1555C
μPC4558C
9644TC

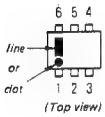


CCD321A2
SN74LS47N
SN74LS123N
SN74LS157
SN74LS279
TC4053BP
TL8608P

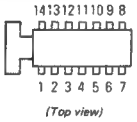


TL8505P

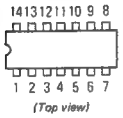
CX130



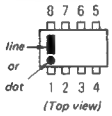
CX158
CX718D



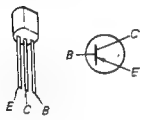
HA17723G
SN74LS00N
SN74LS04N
SN74LS26N
SN74LS73AN
SN74LS93AN
SN74LS122N
SN74LS132N
SN74S04N
SN74S113N
TA7158P



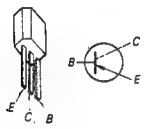
LM318P
NJM2903D



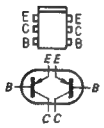
2SA684
2SA733
2SA773
2SA840
2SA893A



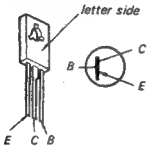
2SA844
2SA844-D
2SA1027R



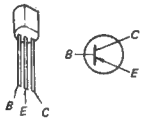
2SA884



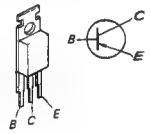
2SA899
2SB648
2SB649A



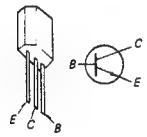
2SA925



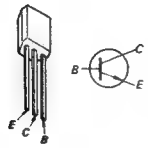
2SB568
2SB568-C09



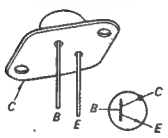
2SC403C
2SC1636



2SC403SP



2SC1114
2SC1413A



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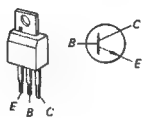
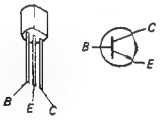
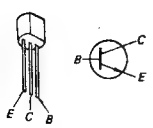
2SC2278



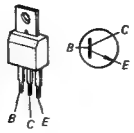
2SC1128
2SC2009



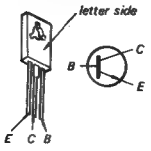
2SC1364
2SC1811
2SC1890A



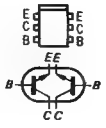
2SC1810
2SC1810-23



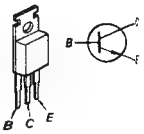
2SC1904
2SD668
2SD669A



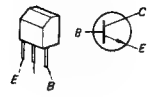
2SC1963



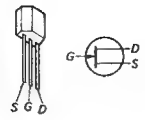
2SD476A
2SD478-C
2SD478-C14
2SD478-D14



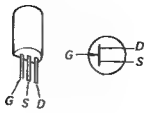
2SD774



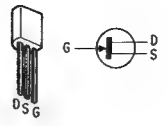
2SK23
2SK23A



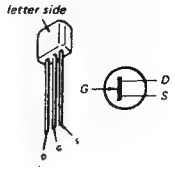
2SK43
2SK43-2
2SK43-11



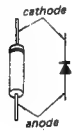
2SK107-4



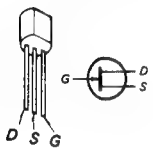
2SK514



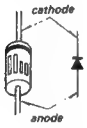
1S1555
1T22A
1T22AM
10E2
RD4.3E-B
RD4.3E-C
RD5.6E-B
RD5.6E-B2Z
RD7.5E-B1Z
RD7.5E-B2Z
RD7.5E-B3Z
RD8.2E-B



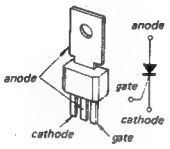
2SK523-K2



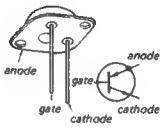
EQA01-05
EQA01-06S
EQA01-15R
EQA01-21R2
EQB01-05
EQB01-06
EQB01-15
EQB01-21
SIB01-02



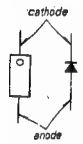
CR3AM
CR3AM-8



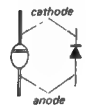
SG264A



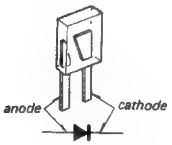
1T25-0



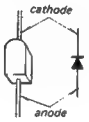
ERC26-15S
GH3F
GM3
U05G
V11N



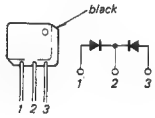
GL9NG2
GL9PR20



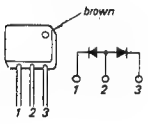
HF1
HF1C



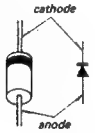
MI152



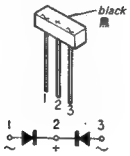
MI152R



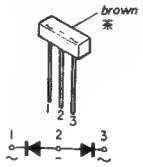
RH1A
RH1C



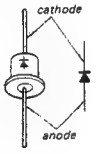
S3VC40



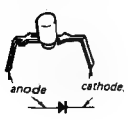
S3VC40R



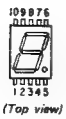
S34



SEL101S



TLR306
TLR306-B

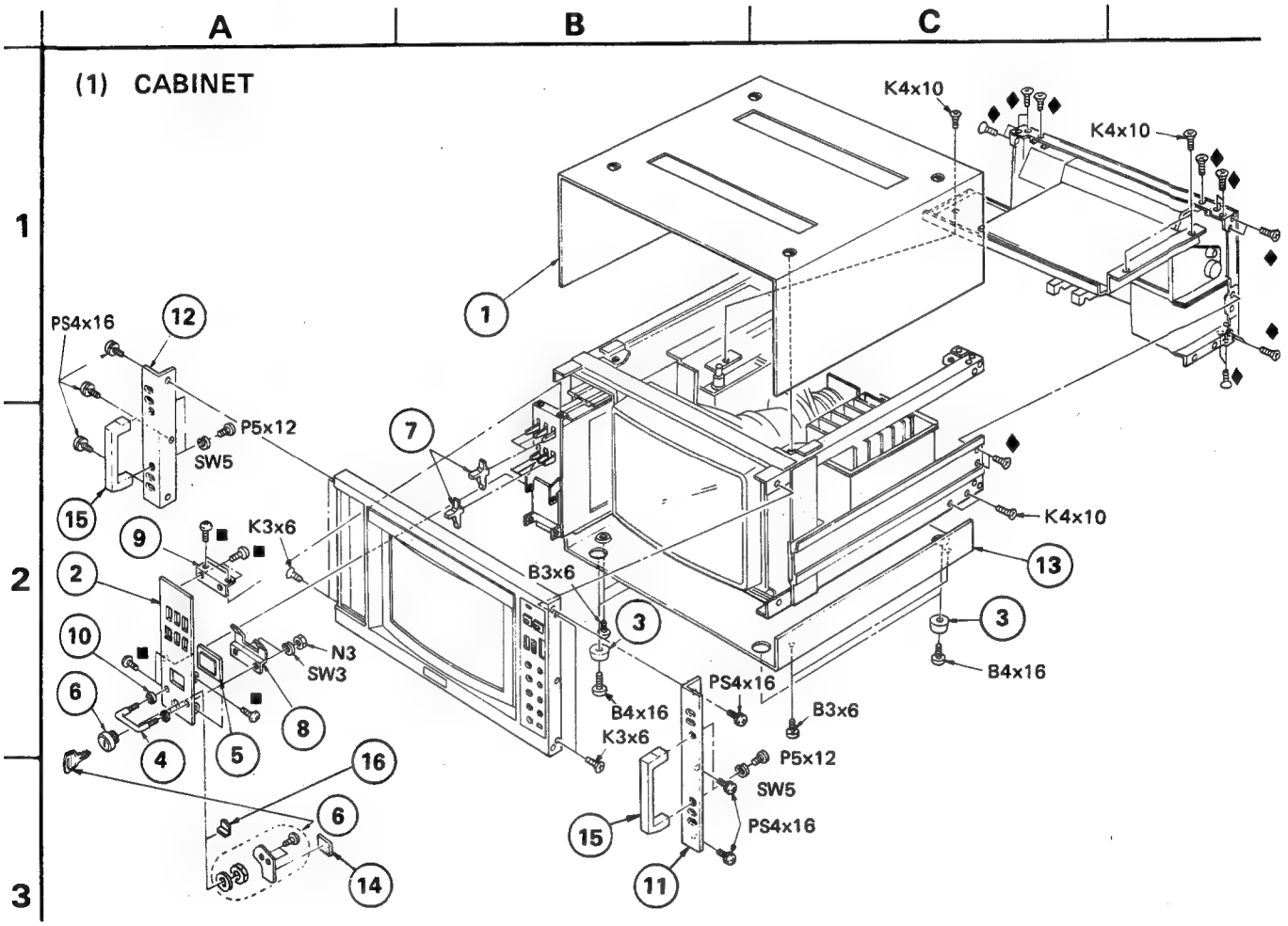


SECTION 7
EXPLODED VIEWS

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

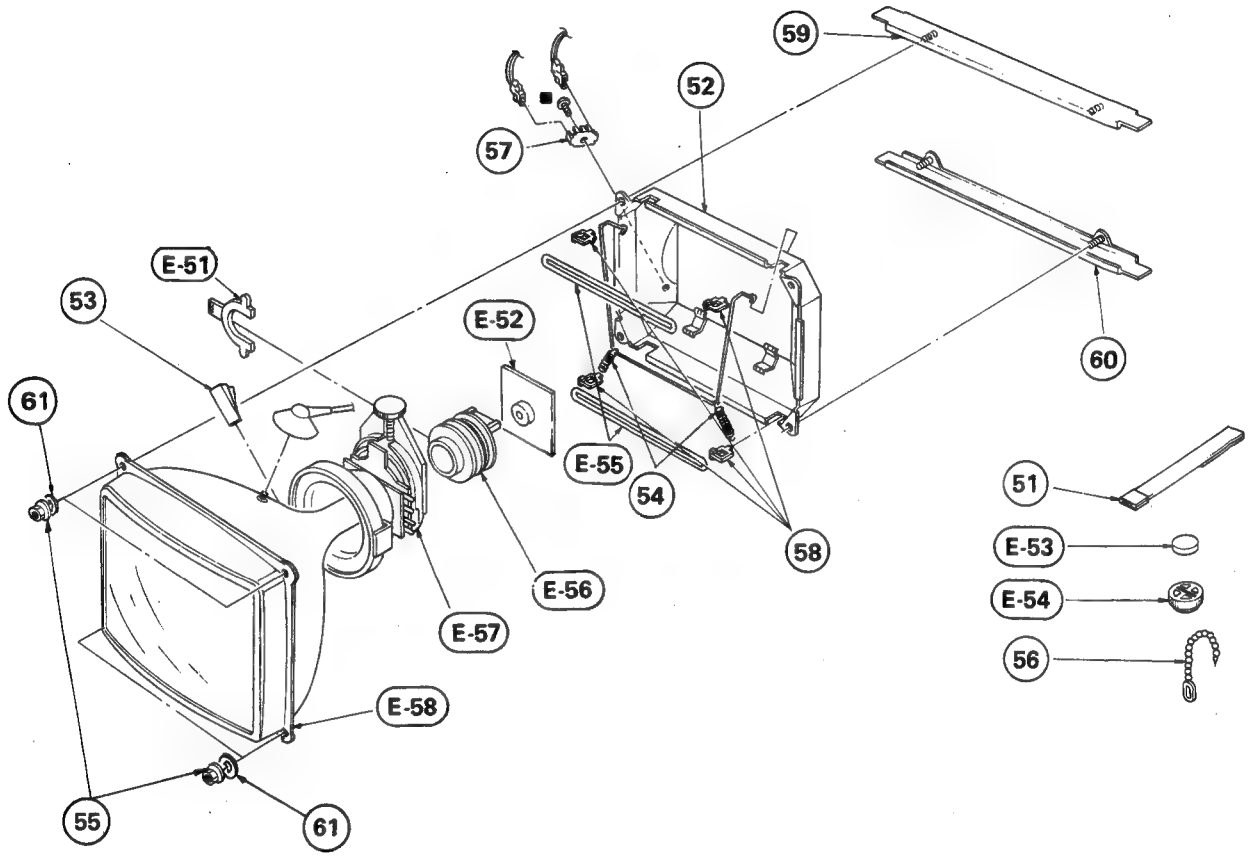
Note:
- As to the part numbered with E-, refer to the electrical pars list.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All screws are Phillips (cross recess) type unless otherwise noted. (—) = slotted head

■ : TA, BV 3 x 8
♦ : K 3 x 6



No.	Part No.	Description	Remark
1	X-4335-902-0	Cover Ass'y	
2	X-4347-101-0	Drawer (BVM-1301P)	
	X-4347-101-2	Drawer (BVM-1301PM)	
3	X-4838-902-X	Foot, rubber	
4	4-335-904-00	Drawer Pull	
5	4-335-907-00	Cover, tally lamp	
6	4-335-937-00	Drawer Keyhole	
7	4-335-954-00	Knob, lever switch	
8	♦ 4-335-956-00	Bracket, lamp cover	
9	♦ 4-335-958-00	Bracket (E)	
10	4-335-959-00	Ring, ornamental	
11	♦ 4-335-963-00	Mounting Bracket, right	
12	♦ 4-335-964-00	Mounting Bracket, left	
13	4-335-983-00	Plate, bottom	
14	4-337-209-00	Cushion	
15	4-337-212-00	Handle	
16	♦ 4-337-211-00	Spacer	

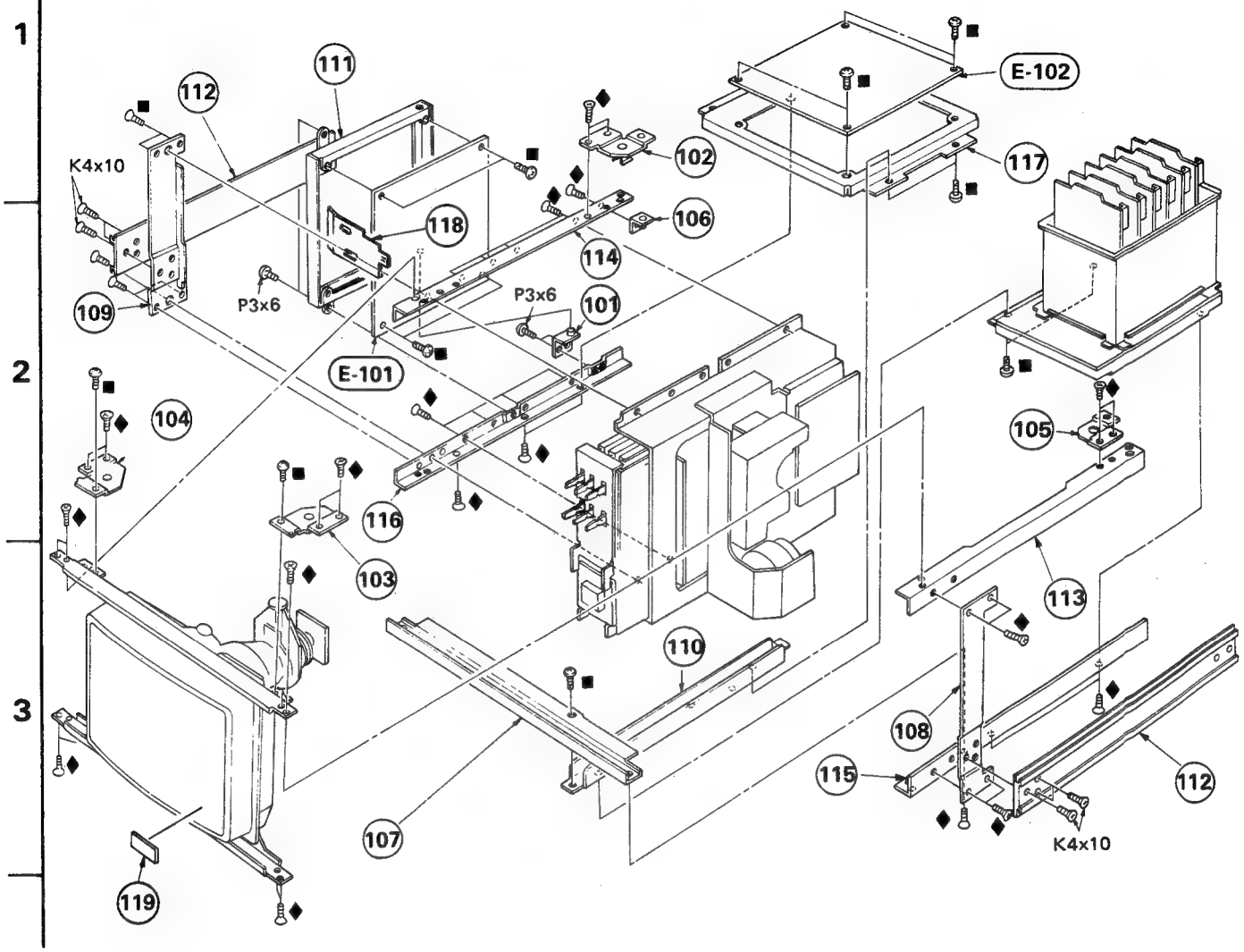
(2) PICTURE TUBE



No.	Part No.	Description	Remark
51	X-4308-815-0	Permalloy Ass'y, convergence compensation	
52	X-4320-005-0	Shield picture tube	
53	3-703-003-00	Spacer, DY	
54	4-302-342-00	Spring	
55	4-304-511-00	Nut, flange	
56	4-308-870-00	Clip, lead wire	
57	♦ 4-309-624-00	Terminal, ground	
58	♦ 4-316-015-00	Holder, wire	
59	♦ 4-335-947-00	Bracket (Upper), picture tube	
60	♦ 4-335-948-00	Bracket (Lower), picture tube	
61	♦ 4-005-459-00	Washer	

Note: Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

(3) SIDE FLAME

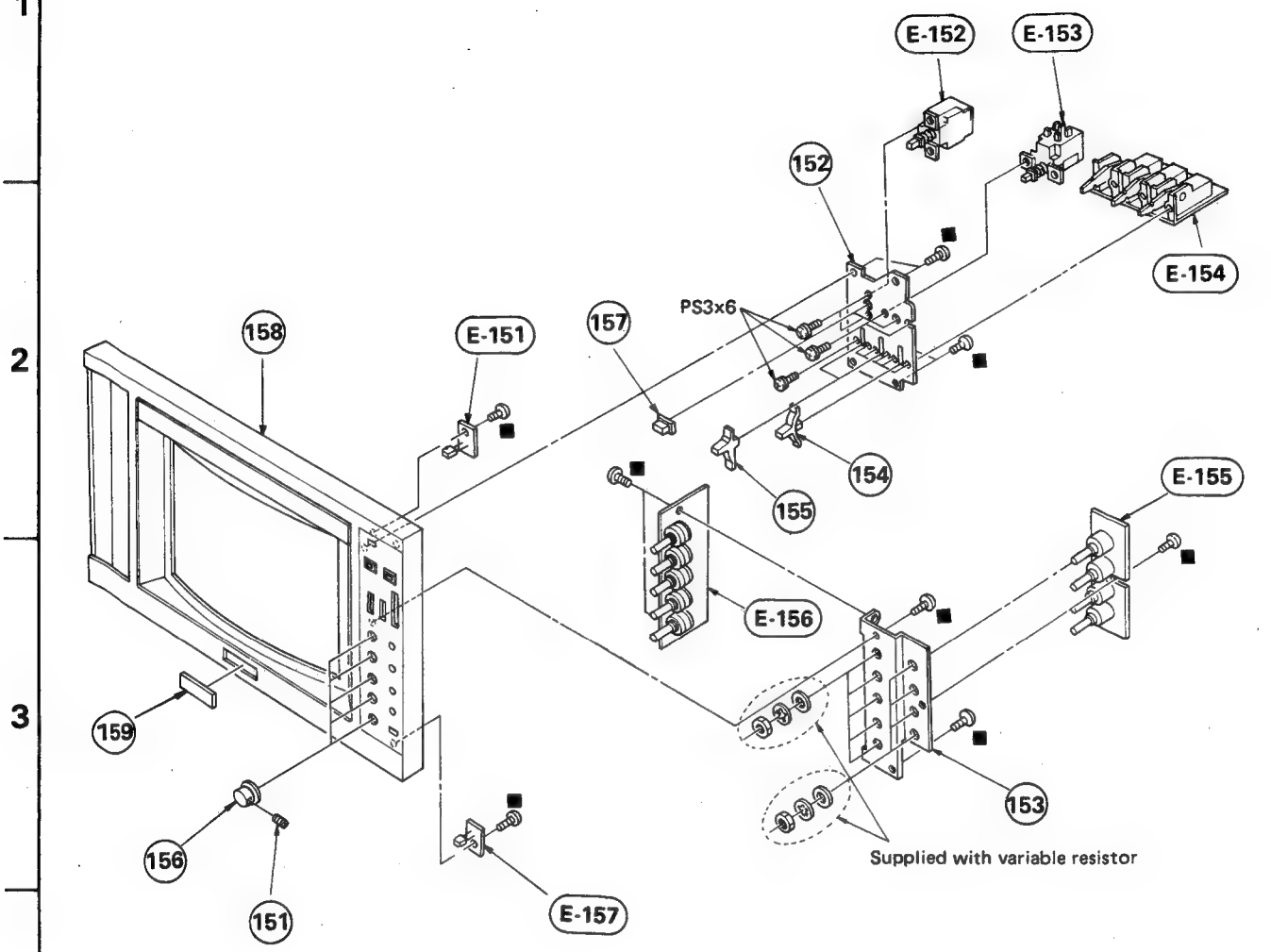


No.	Part No.	Description	Remark
101	♦ 4-335-917-00	Shaft, lower	
102	♦ 4-335-918-00	Bracket, fastener; left rear	
103	♦ 4-335-919-00	Bracket, fastener; right front	
104	♦ 4-335-920-00	Bracket, fastener; left front	
105	♦ 4-335-921-00	Bracket, fastener; right rear	
106	♦ 4-335-926-00	Shaft, upper	
107	♦ 4-335-940-00	Stay, lower	
108	♦ 4-335-941-00	Frame, right	
109	♦ 4-335-942-00	Frame, left	
110	♦ 4-335-943-00	Stay (L)	

No.	Part No.	Description	Remark
111	♦ 4-335-946-00	Bracket, E board	
112	♦ 4-335-961-00	Frame, side	
113	♦ 4-335-966-00	Frame, right upper	
114	♦ 4-335-967-00	Frame, left upper	
115	♦ 4-335-968-00	Frame, right lower	
116	♦ 4-335-969-00	Frame, left lower	
117	♦ 4-335-971-00	Bracket, G board	
118	4-335-994-00	PVC Sheet, E board	
119	3-701-690-00	Label (BVM-1301P)	

Note: Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

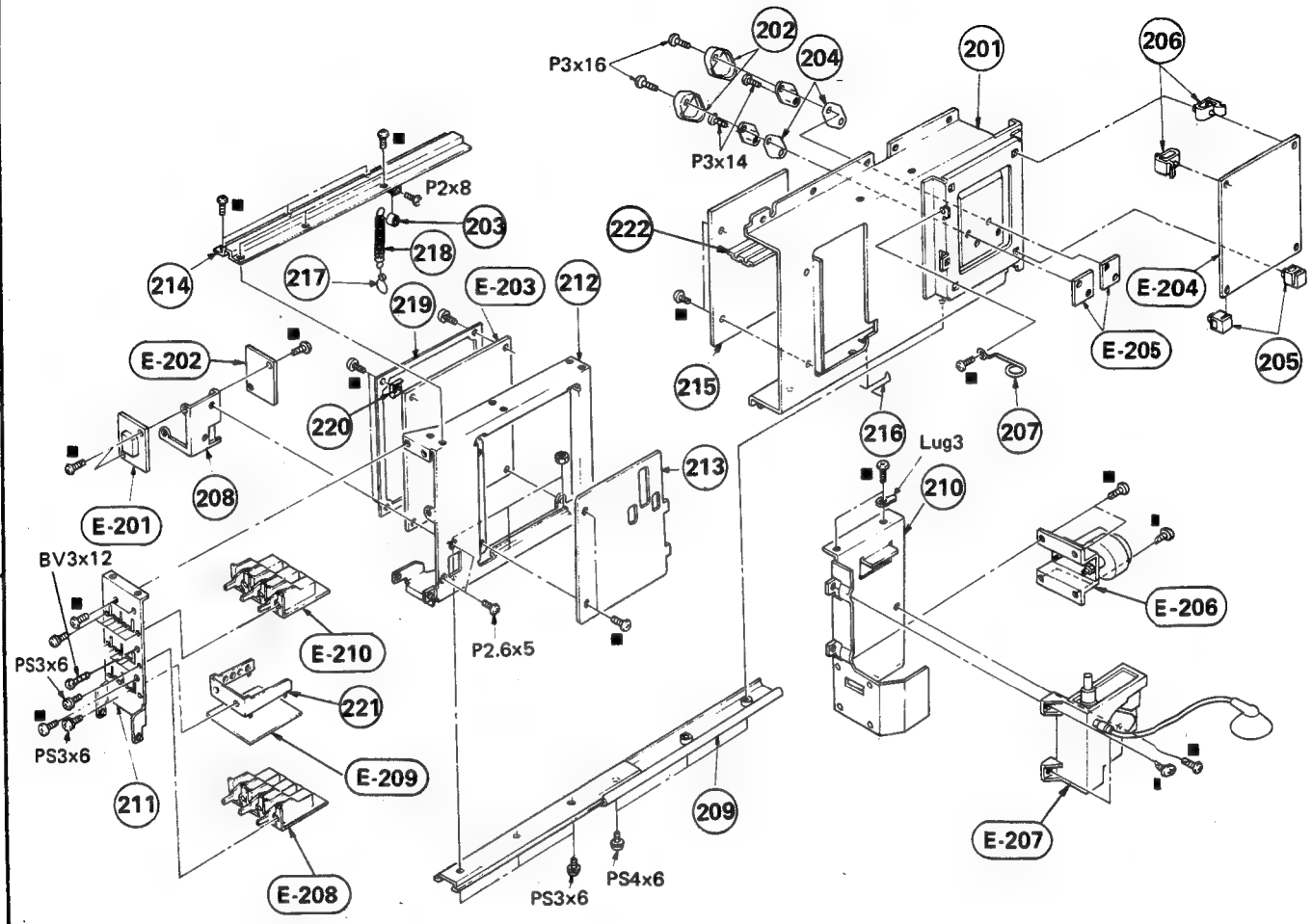
(4) MASK



No.	Part No.	Description	Remark
151	3-701-506-00	Set Screw, double point 3 x 4	
152	♦ 4-335-906-00	Bracket, pushbutton switch	
153	♦ 4-335-945-00	Bracket, control	
154	4-347-105-00	Knob, lever switch (4P)	
155	4-335-954-00	Knob, lever switch	
156	4-335-960-00	Knob, control	
157	4-335-962-00	Pushbutton	
158	4-347-107-00	Panel, front	
159	4-836-828-11	Emblem, SONY	

Note: Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

(5) CHASSIS (LEFT)

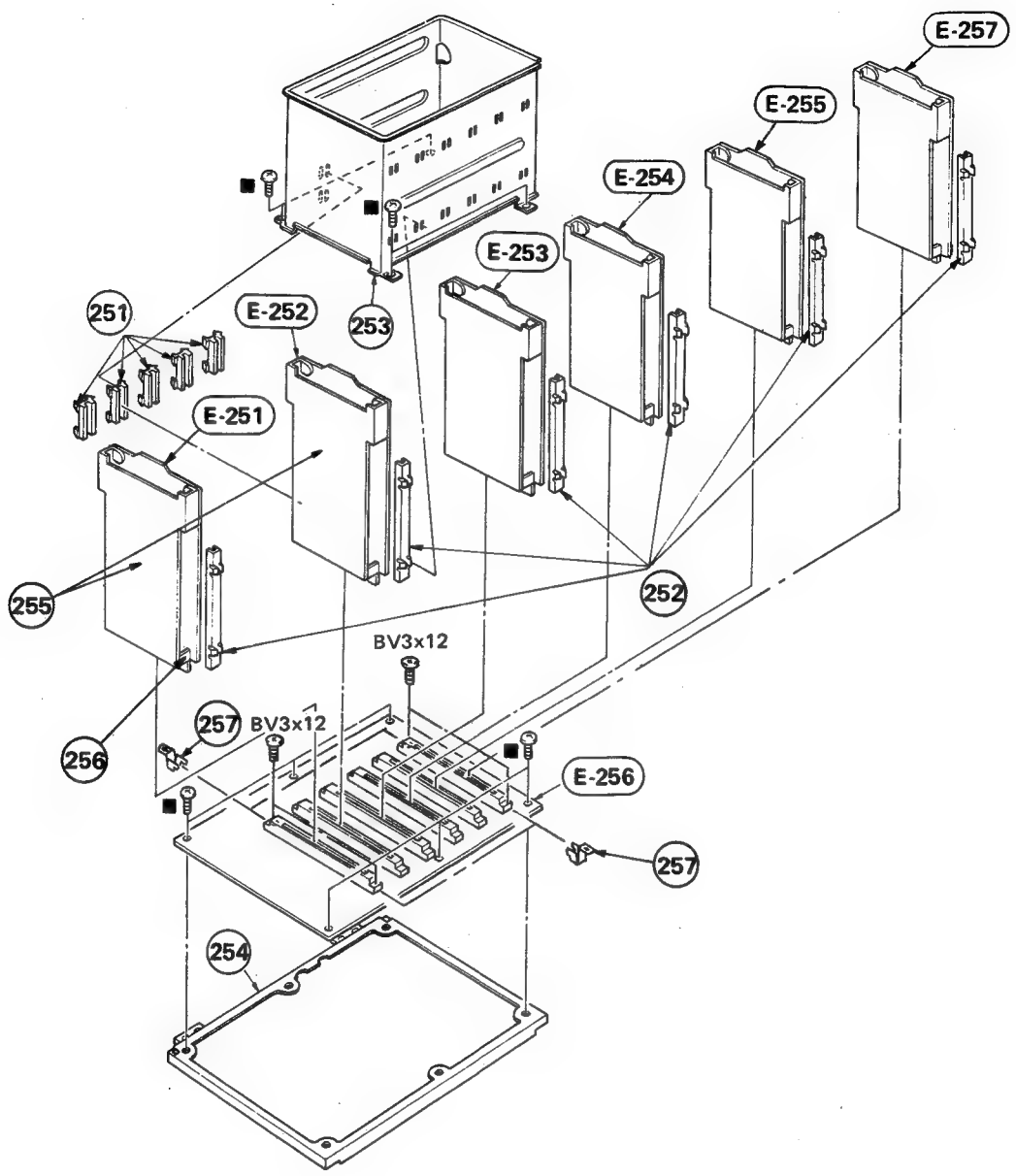


No.	Part No.	Description	Remark
201	♦ X-4335-901-0	Housing Ass'y, Slider	222
202	2-234-429-00	Cover, safety transistor (BVM-1301PM)	
		Cover, safety transistor (BVM-1301P)	
202	2-234-429-11	Cover, safety transistor	
203	3-657-841-11	Spacer	
204	3-701-353-00	Spacer, mica	
205	♦ 3-701-903-00	Holder, circuit board	
206	♦ 3-703-141-00	Holder, circuit board	
207	4-303-731-00	Hook, lead wire	
208	♦ 4-335-910-00	Bracket, X board	
209	♦ 4-335-949-00	Rail, guide	
210	♦ 4-335-950-00	Bracket, FBT	

No.	Part No.	Description	Remark
211	♦ 4-335-957-00	Bracket (L), lever switch	
212	♦ 4-335-965-00	Bracket, D board	
213	4-335-979-00	Plate, indication adjustment	
214	♦ 4-335-980-00	Slider	
215	♦ 4-335-992-00	Plate (L), shield	
216	♦ 4-335-993-00	Click (A)	
217	♦ 4-335-995-00	Ring	
218	4-335-996-00	Spring	
219	♦ 4-337-206-00	Cover, D board	
220	♦ 4-337-210-00	Plate (D) Ground	
221	♦ 4-337-215-00	Bracket (DB) PC Baord	
222	♦ 4-335-944-00	Guide, slider	

Note: Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

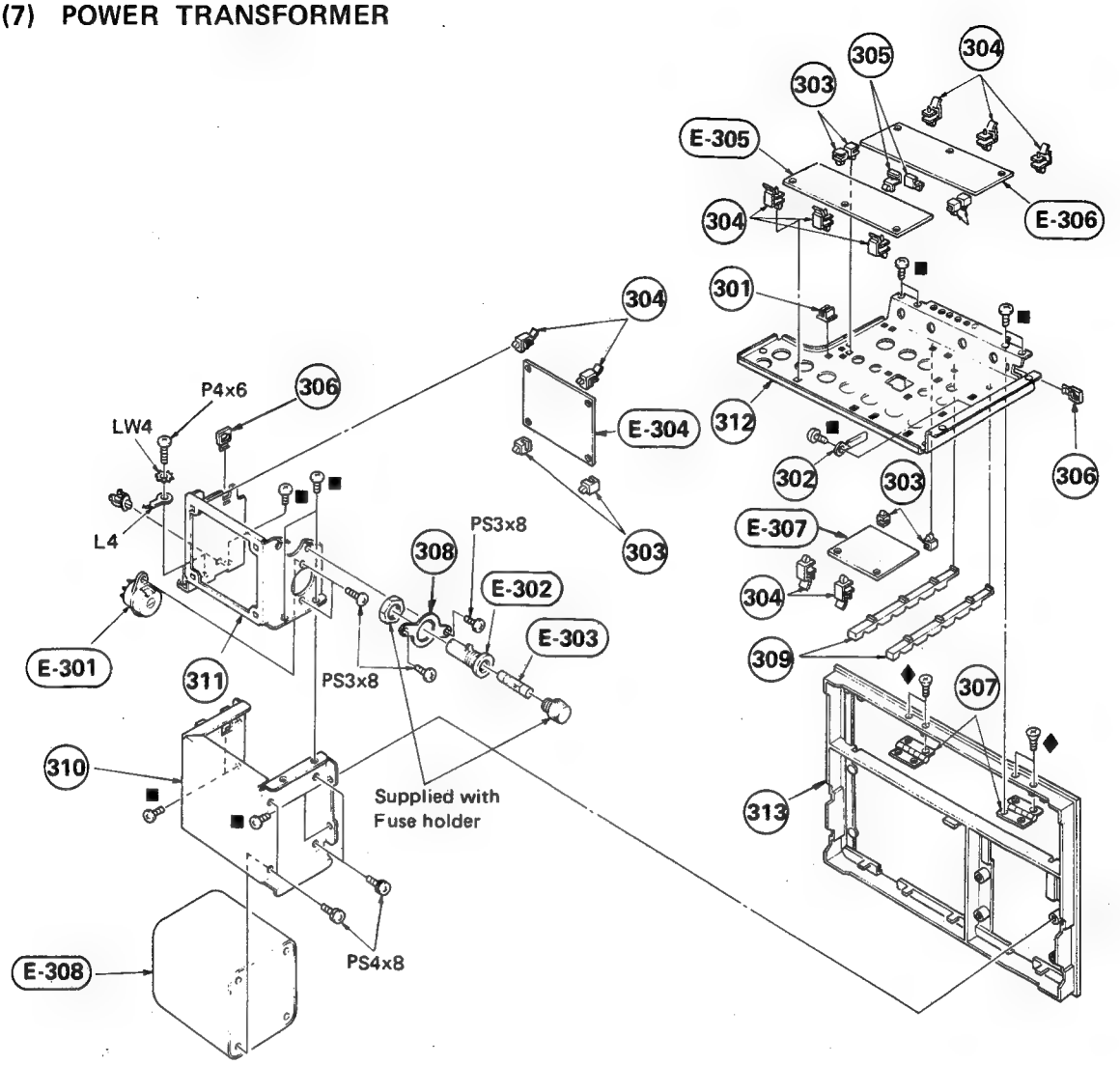
(6) T BOARD



No.	Part No.	Description	Remark
251	♦ 4-335-930-00	Guide (S)	
252	♦ 4-335-931-00	Guide (L)	
253	♦ 4-335-951-02	Box, guide	
254	♦ 4-335-972-00	Bracket, T board	
255	♦ 4-335-923-00	Cover, shield	
256	♦ 4-335-924-00	Bracket, shield, cover	
257	♦ 4-335-912-00	Bracket, guide box	

Note: Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

(7) POWER TRANSFORMER

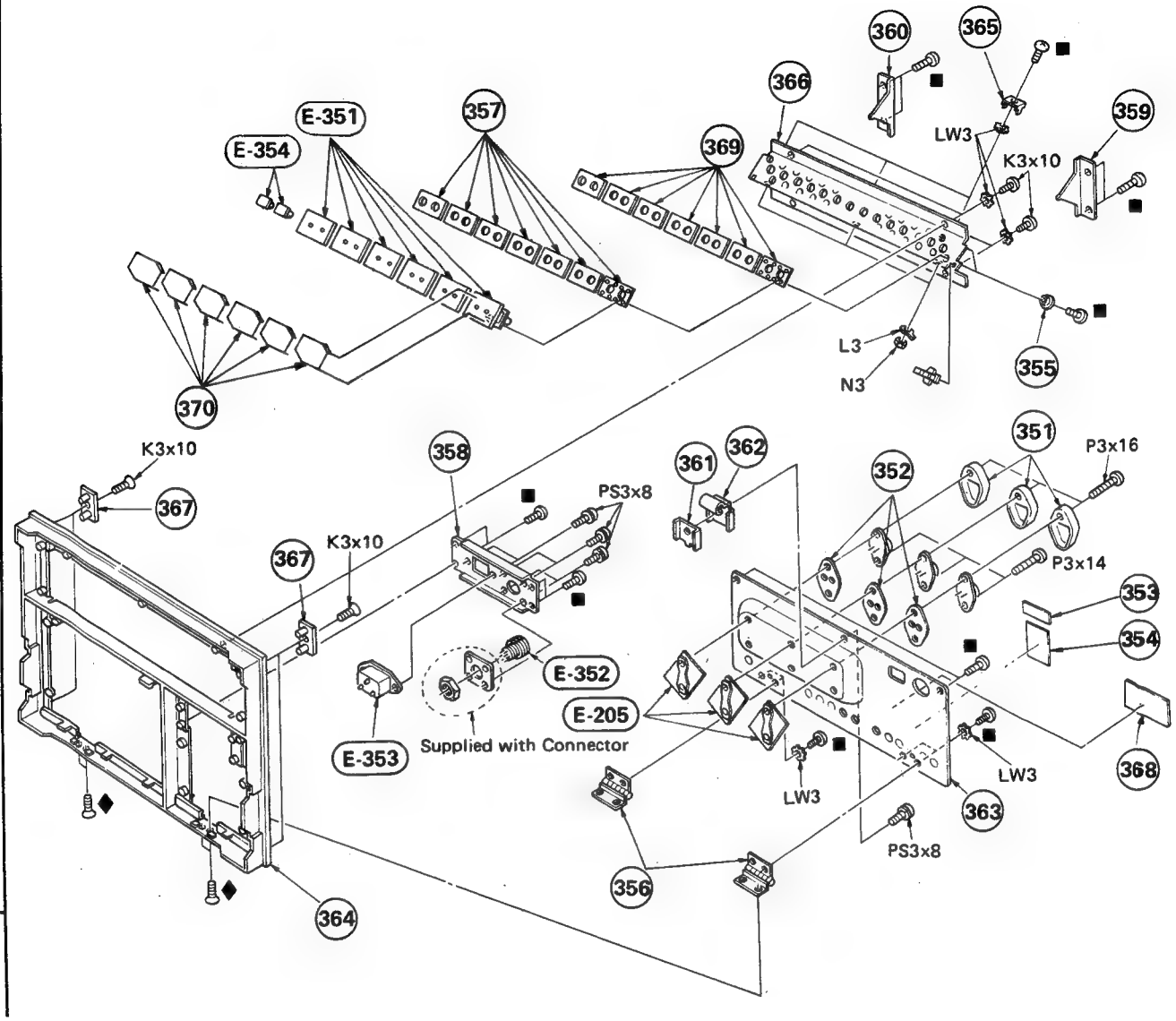


No.	Part No.	Description	Remark
301	♦ 3-642-310-00	Holder, circuit board	
302	♦ 3-701-822-00	Holder, wire	
303	♦ 3-701-903-00	Holder, circuit board	
304	♦ 3-703-141-00	Holder, circuit board	
305	♦ 4-308-838-00	Holder, circuit board	
306	♦ 4-316-015-00	Holder, wire	
307	4-335-902-00	Hinge	

No.	Part No.	Description	Remark
308	♦ 4-335-932-00	Bracket, fuse	
309	♦ 4-335-939-00	Stopper, circuit board	
310	♦ 4-335-952-00	Bracket, PT	
311	♦ 4-335-970-00	Bracket, F board	
312	♦ 4-335-974-00	Bracket, circuit board (upper)	
313	♦ 4-335-977-00	Frame, rear	

Note: Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

(8) REAR PLATE



No.		Part No.	Description	Remark
351	♦	2-234-429-11	Cover, safety transistor	
352		2-825-003-00	Spacer	
353		4-337-218-21	Label, voltage indication (BVM-1301P)	
353		4-337-218-31	Label, voltage indication (BVM-1301PM)	
354	♦	4-347-102-00	Lavel, PTB (BVM-1301P)	
355		4-335-901-00	Bushing, BNC connector	
356		4-335-903-00	Hinge, rear plate	
357	♦	4-335-927-00	Terminal (S), ground	
358	♦	4-335-928-00	Bracket, AC IN connector	
359	♦	4-335-933-00	Plate (R), side	
360	♦	4-335-934-00	Plate (L), side	
361		4-335-935-00	Retainer, click	

No.		Part No.	Description	Remark
362		4-335-936-00	Click (B)	
363	♦	4-335-973-00	Plate, rear	
364	♦	4-335-977-00	Frame, rear	
365		4-335-978-00	Terminal BNC ground	
366	♦	4-335-981-11	Plate, connector	
367		4-335-986-00	Foot, rear	
368	♦	4-347-103-00	Label, model number, Large (BVM-1301P)	
368	♦	4-351-101-00	Label, model number, Large (BVM-1301PM)	
369	♦	4-335-929-00	Insulator	
370	♦	4-337-216-00	Plate (W), shield	

Note: Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

SECTION 8
ELECTRICAL PARTS LIST

NOTE:

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

- =>: Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.

- Items marked " ♦ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

CAPACITORS
- MF : μF, PF : μμF

RESISTORS
- All resistors are in ohms
- F : nonflammable

COILS
- MMH : mH, UH : μH

- P : BVM-1301P
  PM: BVM-1301PM
- **The components identified by ⊠ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.**

Ref.No	Part No	Description			Remark
	♦:A-1135-082-A	BC BOARD, COMPLETE			PM E-253
	♦:A-1135-133-A	BC BOARD, COMPLETE			P E-253
	♦:4-335-908-00	WASHER (S), FITTING, CONTROL			
	♦:4-335-922-00	CASE, SHIELD (BC)			
		CAPACITOR			
C1	1-123-316-00	ELECT	10MF	20% 16V	
C2	1-101-004-00	CERAMIC	0.01MF	50V	
C6	1-101-006-00	CERAMIC	0.047MF	50V	
C8	1-123-316-00	ELECT	10MF	20% 16V	
C9	1-101-004-00	CERAMIC	0.01MF	50V	
C11	1-101-004-00	CERAMIC	0.01MF	50V	
C12	1-123-316-00	ELECT	10MF	20% 16V	
C13	1-123-316-00	ELECT	10MF	20% 16V	
C14	1-101-004-00	CERAMIC	0.01MF	50V	
C16	1-101-004-00	CERAMIC	0.01MF	50V	
C18	1-101-004-00	CERAMIC	0.01MF	50V	
C19	1-102-678-00	CERAMIC	100PF	5% 50V	
C20	1-102-888-00	CERAMIC	150PF	5% 50V	
C21	1-102-678-00	CERAMIC	100PF	5% 50V	
C22	1-102-678-00	CERAMIC	100PF	5% 50V	
C23	1-102-888-00	CERAMIC	150PF	5% 50V	
C24	1-102-824-00	CERAMIC	430PF	5% 50V	
C25	1-101-004-00	CERAMIC	0.01MF	50V	
C26	1-101-004-00	CERAMIC	0.01MF	50V	
C27	1-101-004-00	CERAMIC	0.01MF	50V	
C28	1-101-004-00	CERAMIC	0.01MF	50V	
C29	1-101-004-00	CERAMIC	0.01MF	50V	
C30	1-101-006-00	CERAMIC	0.047MF	50V	
C31	1-101-004-00	CERAMIC	0.01MF	50V	
C32	1-121-806-00	ELECT NONPOLA	10MF	20% 16V	
C33	1-101-004-00	CERAMIC	0.01MF	50V	
C34	1-102-678-00	CERAMIC	100PF	5% 50V	
C35	1-102-888-00	CERAMIC	150PF	5% 50V	
C36	1-123-320-00	ELECT	100MF	20% 16V	
C37	1-123-320-00	ELECT	100MF	20% 16V	
C38	1-101-006-00	CERAMIC	0.047MF	50V	
C39	1-123-320-00	ELECT	100MF	20% 16V	
C40	1-101-006-00	CERAMIC	0.047MF	50V	
C41	1-123-320-00	ELECT NONPOLA	100MF	20% 16V	
C42	1-123-320-00	ELECT	100MF	20% 16V	
C43	1-123-320-00	ELECT	100MF	20% 16V	
C44	1-101-006-00	CERAMIC	0.047MF	50V	
C45	1-123-320-00	ELECT	100MF	20% 16V	
C46	1-101-006-00	CERAMIC	0.047MF	50V	
C47	1-123-319-00	ELECT	47MF	20% 16V	
C48	1-123-319-00	ELECT	47MF	20% 16V	
C49	1-123-319-00	ELECT	47MF	20% 16V	
C50	1-101-006-00	CERAMIC	0.047MF	50V	
C51	1-101-004-00	CERAMIC	0.01MF	50V	
C52	1-101-004-00	CERAMIC	0.01MF	50V	
C53	1-101-004-00	CERAMIC	0.01MF	50V	
C54	1-123-320-00	ELECT	100MF	20% 16V	
C56	1-123-316-00	ELECT	10MF	20%	
		IC			
IC1	8-759-240-53	IC TC4053BP			
IC2	8-759-240-53	IC TC4053BP			
IC3	8-759-240-53	IC TC4053BP			
IC4	8-759-240-53	IC TC4053BP			
IC5	8-759-900-00	IC SN74LS00N			
IC6	8-759-900-26	IC SN74LS26N			
IC7	8-759-901-23	IC SN74LS123N			
IC8	8-759-901-23	IC SN74LS123N			
IC9	8-759-901-23	IC SN74LS123N			
IC10	8-759-900-26	IC SN74LS26N			
IC11	8-759-900-26	IC SN74LS26N			
IC12	8-759-145-58	IC UPC4558C			
IC13	8-759-901-23	IC SN74LS123N			
		TRANSISTOR			
Q1	8-729-384-48	TRANSISTOR 2SA844			
Q2	8-729-384-48	TRANSISTOR 2SA844			
Q3	8-729-384-48	TRANSISTOR 2SA844			
Q7	8-729-384-48	TRANSISTOR 2SA844			
Q9	8-729-384-48	TRANSISTOR 2SA844			
Q10	8-729-384-48	TRANSISTOR 2SA844			
Q11	8-729-384-48	TRANSISTOR 2SA844			
Q12	8-729-384-48	TRANSISTOR 2SA844			
Q13	8-729-384-48	TRANSISTOR 2SA844			
Q14	8-729-384-48	TRANSISTOR 2SA844			
Q15	8-729-384-48	TRANSISTOR 2SA844			
Q16	8-729-384-48	TRANSISTOR 2SA844			
Q17	8-729-384-48	TRANSISTOR 2SA844			
Q18	8-724-375-01	TRANSISTOR 2SC403C			
Q19	8-724-375-01	TRANSISTOR 2SC403C			
Q20	8-724-375-01	TRANSISTOR 2SC403C			
Q21	8-729-384-48	TRANSISTOR 2SA844			
Q22	=>8-769-200-40	TRANSISTOR 2SK107-4			
Q23	8-729-384-48	TRANSISTOR 2SA844			
Q24	=>8-769-200-40	TRANSISTOR 2SK107-4			
Q25	8-729-384-48	TRANSISTOR 2SA844			
Q26	8-729-384-48	TRANSISTOR 2SA844			
Q27	8-729-384-48	TRANSISTOR 2SA844			
Q28	8-729-384-48	TRANSISTOR 2SA844			
Q29	8-729-384-48	TRANSISTOR 2SA844			
Q30	8-729-384-48	TRANSISTOR 2SA844			
Q31	8-729-663-47	TRANSISTOR 2SC1364			
Q32	8-724-375-01	TRANSISTOR 2SC403C			
Q33	8-724-375-01	TRANSISTOR 2SC403C			
Q34	8-724-375-01	TRANSISTOR 2SC403C			
Q35	8-729-384-48	TRANSISTOR 2SA844			
Q36	8-729-384-48	TRANSISTOR 2SA844			
Q37	8-729-384-48	TRANSISTOR 2SA844			

BC BD

Ref.No	Part No	Description				Remark
		RESISTOR				
R1	1-246-791-00	CARBON	4.7K	5%	1/8W	
R2	1-246-791-00	CARBON	4.7K	5%	1/8W	
R3	1-246-791-00	CARBON	4.7K	5%	1/8W	
R4	1-246-771-00	CARBON	100	5%	1/8W	
R8	1-214-138-00	METAL	1.8K	1%	1/4W	
R9	1-246-787-00	CARBON	2.2K	5%	1/8W	
R10	1-214-147-00	METAL	4.3K	1%	1/4W	
R11	1-246-771-00	CARBON	100	5%	1/8W	
R15	1-214-138-00	METAL	1.8K	1%	1/4W	
R16	1-246-787-00	CARBON	2.2K	5%	1/8W	
R17	1-214-147-00	METAL	4.3K	1%	1/4W	
R18	1-246-771-00	CARBON	100	5%	1/8W	
R22	1-214-138-00	METAL	1.8K	1%	1/4W	
R23	1-246-787-00	CARBON	2.2K	5%	1/8W	
R24	1-214-147-00	METAL	4.3K	1%	1/4W	
R25	1-214-146-00	METAL	3.9K	1%	1/4W	PM
R26	1-214-096-00	METAL	33	1%	1/4W	
R27	1-214-155-00	METAL	9.1K	1%	1/4W	
R28	1-214-138-00	METAL	1.8K	1%	1/4W	
R29	1-214-147-00	METAL	4.3K	1%	1/4W	
R30	1-214-147-00	METAL	4.3K	1%	1/4W	
R31	1-214-147-00	METAL	4.3K	1%	1/4W	
R38	1-246-791-00	CARBON	4.7K	5%	1/8W	
R39	1-246-791-00	CARBON	4.7K	5%	1/8W	
R40	1-246-791-00	CARBON	4.7K	5%	1/8W	
R41	1-214-153-00	METAL	7.5K	1%	1/4W	PM
R42	1-214-096-00	METAL	33	1%	1/4W	
R43	1-214-162-00	METAL	18K	1%	1/4W	
R44	1-246-795-00	CARBON	10K	5%	1/8W	
R45	1-246-791-00	CARBON	4.7K	5%	1/8W	
R46	1-246-795-00	CARBON	10K	5%	1/8W	
R47	1-246-791-00	CARBON	4.7K	5%	1/8W	
R48	1-246-795-00	CARBON	10K	5%	1/8W	
R49	1-246-791-00	CARBON	4.7K	5%	1/8W	
R50	1-214-136-00	METAL	1.5K	1%	1/4W	
R51	1-214-136-00	METAL	1.5K	1%	1/4W	
R52	1-214-136-00	METAL	1.5K	1%	1/4W	
R53	1-246-787-00	CARBON	2.2K	5%	1/8W	
R54	1-246-795-00	CARBON	10K	5%	1/8W	
R55	1-246-854-00	CARBON	7.5K	5%	1/8W	
R56	1-246-791-00	CARBON	4.7K	5%	1/8W	
R57	1-246-848-00	CARBON	2.4K	5%	1/8W	
R58	1-246-848-00	CARBON	2.4K	5%	1/8W	
R59	1-246-848-00	CARBON	2.4K	5%	1/8W	
R60	1-246-848-00	CARBON	2.4K	5%	1/8W	
R61	1-246-795-00	CARBON	10K	5%	1/8W	
R62	1-246-795-00	CARBON	10K	5%	1/8W	
R63	1-214-153-00	METAL	7.5K	1%	1/4W	
R64	1-214-169-00	METAL	36K	1%	1/4W	
R65	1-246-848-00	CARBON	2.4K	5%	1/8W	
R66	1-246-791-00	CARBON	4.7K	5%	1/8W	
R67	1-214-136-00	METAL	1.5K	1%	1/4W	
R68	1-214-154-00	METAL	8.2K	1%	1/4W	
R69	1-214-153-00	METAL	7.5K	1%	1/4W	
R70	1-214-169-00	METAL	36K	1%	1/4W	
R71	1-246-848-00	CARBON	2.4K	5%	1/8W	
R72	1-246-791-00	CARBON	4.7K	5%	1/8W	
R73	1-214-136-00	METAL	1.5K	1%	1/4W	
R74	1-246-802-00	CARBON	39K	5%	1/8W	
R75	1-214-141-00	METAL	2.4K	1%	1/4W	
R76	1-214-136-00	METAL	1.5K	1%	1/4W	
R77	1-214-136-00	METAL	1.5K	1%	1/4W	
R78	1-214-141-00	METAL	2.4K	1%	1/4W	
R79	1-214-116-00	METAL	220	1%	1/4W	
R80	1-246-795-00	CARBON	10K	5%	1/8W	
R81	1-246-795-00	CARBON	10K	5%	1/8W	
R82	1-246-795-00	CARBON	10K	5%	1/8W	
R83	1-214-146-00	METAL	3.9K	1%	1/4W	
R84	1-246-791-00	CARBON	4.7K	5%	1/8W	
R85	1-246-848-00	CARBON	2.4K	5%	1/8W	
R86	1-246-791-00	CARBON	4.7K	5%	1/8W	
R87	1-246-791-00	CARBON	4.7K	5%	1/8W	
R88	1-246-795-00	CARBON	10K	5%	1/8W	
R89	1-202-473-00	COMPOSITION	5.6M	5%	1/4W	
R90	1-214-160-00	METAL	15K	1%	1/4W	
R91	1-246-795-00	CARBON	10K	5%	1/8W	
R92	1-214-180-00	METAL	100K	1%	1/4W	
R93	1-246-783-00	CARBON	1K	5%	1/8W	
R94	1-214-120-00	METAL	330	1%	1/4W	
R95	1-214-156-00	METAL	10K	1%	1/4W	
R96	1-246-795-00	CARBON	10K	5%	1/8W	
R97	1-214-136-00	METAL	1.5K	1%	1/4W	
R98	1-214-162-00	METAL	18K	1%	1/4W	
R99	1-214-162-00	METAL	18K	1%	1/4W	
R100	1-246-796-00	CARBON	12K	5%	1/8W	
R101	1-246-795-00	CARBON	10K	5%	1/8W	
R102	1-214-108-00	METAL	100	1%	1/4W	
R103	1-246-798-00	CARBON	18K	5%	1/8W	
R104	1-214-096-00	METAL	33	1%	1/4W	
R105	1-214-176-00	METAL	68K	1%	1/4W	
		VARIABLE RESISTOR				
RV1	1-224-941-21	RES, ADJ, METAL FILM 20K				
RV2	1-224-941-21	RES, ADJ, METAL FILM 20K				
RV3	1-224-941-21	RES, ADJ, METAL FILM 20K				
RV4	1-224-941-21	RES, ADJ, METAL FILM 20K				
RV5	1-224-941-21	RES, ADJ, METAL FILM 20K				
RV6	1-224-941-21	RES, ADJ, METAL FILM 20K				
RV7	1-224-934-21	RES, ADJ, METAL FILM 100				

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♣:A-1135-083-A	BD BOARD, COMPLETE		E-252
♣:4-335-908-00	WASHER (S), FITTING, CONTROL		

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

- =>: Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.

- Items marked " ♣ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

CAPACITORS
- MF : μF, PF : μμF

RESISTORS
- All resistors are in ohms
- F : nonflammable

COILS
- MMH : mH, UH : μH

- P : BVM-1301P
  PM: BVM-1301PM

Ref.No	Part No	Description			Remark
		CAPACITOR			
C1	1-102-865-00	CERAMIC	8PF	0.5PF	50V
C2	1-123-316-00	ELECT	10MF	20%	16V
C3	1-108-389-00	MYLAR	0.1MF	10%	100V
C4	1-101-006-00	CERAMIC	0.047MF		50V
C5	1-101-004-00	CERAMIC	0.01MF		50V
C6	1-123-316-00	ELECT	10MF	20%	16V
C7	1-102-514-00	CERAMIC	22PF	5%	50V
C8	1-108-389-00	MYLAR	0.1MF	10%	100V
C9	1-101-004-00	CERAMIC	0.01MF		50V
C10	1-123-316-00	ELECT	10MF	20%	16V
C11	1-102-508-00	CERAMIC	10PF	0.5PF	50V
C12	1-101-006-00	CERAMIC	0.047MF		50V
C13	1-108-389-00	MYLAR	0.1MF	10%	100V
C14	1-101-006-00	CERAMIC	0.047MF		50V
C15	1-101-004-00	CERAMIC	0.01MF		50V
C16	1-102-865-00	CERAMIC	8PF	0.5PF	50V
C17	1-123-316-00	ELECT	10MF	20%	16V
C18	1-108-389-00	MYLAR	0.1MF	10%	100V
C19	1-101-006-00	CERAMIC	0.047MF		50V
C20	1-101-004-00	CERAMIC	0.01MF		50V
C21	1-123-316-00	ELECT	10MF	20%	16V
C22	1-102-514-00	CERAMIC	22PF	5%	50V
C23	1-108-389-00	MYLAR	0.1MF	10%	100V
C24	1-101-004-00	CERAMIC	0.01MF		50V
C25	1-123-316-00	ELECT	10MF	20%	16V
C26	1-102-865-00	CERAMIC	8PF	0.5PF	50V
C27	1-101-006-00	CERAMIC	0.047MF		50V
C28	1-108-389-00	MYLAR	0.1MF	10%	100V
C29	1-101-006-00	CERAMIC	0.047MF		50V
C30	1-101-004-00	CERAMIC	0.01MF		50V
C31	1-102-865-00	CERAMIC	8PF	0.5PF	50V
C32	1-123-316-00	ELECT	10MF	20%	16V
C33	1-108-389-00	MYLAR	0.1MF	10%	100V
C34	1-101-006-00	CERAMIC	0.047MF		50V
C35	1-101-004-00	CERAMIC	0.01MF		50V
C36	1-123-316-00	ELECT	10MF	20%	16V
C37	1-102-514-00	CERAMIC	22PF	5%	50V
C38	1-108-389-00	MYLAR	0.1MF	10%	100V
C39	1-101-004-00	CERAMIC	0.01MF		50V
C40	1-123-316-00	ELECT	10MF	20%	16V
C41	1-102-865-00	CERAMIC	8PF	0.5PF	50V
C42	1-101-006-00	CERAMIC	0.047MF		50V
C43	1-108-389-00	MYLAR	0.1MF	10%	100V
C44	1-101-006-00	CERAMIC	0.047MF		50V
C45	1-101-004-00	CERAMIC	0.01MF		50V
C46	1-121-257-00	ELECT NONPOLA	4.7MF		16V
C47	1-121-257-00	ELECT NONPOLA	4.7MF		16V
C48	1-121-257-00	ELECT NONPOLA	4.7MF		16V
C49	1-102-865-00	CERAMIC	8PF	0.5PF	50V
C50	1-123-316-00	ELECT	10MF	20%	16V
C51	1-108-389-00	MYLAR	0.1MF	10%	100V
C52	1-101-006-00	CERAMIC	0.047MF		50V
C53	1-101-004-00	CERAMIC	0.01MF		50V
C54	1-121-257-00	ELECT NONPOLA	4.7MF		16V
C55	1-108-385-00	MYLAR	0.047MF	10%	100V
C56	1-101-004-00	CERAMIC	0.01MF		50V
C57	1-101-004-00	CERAMIC	0.01MF		50V
C58	1-108-377-00	MYLAR	0.01MF	10%	100V
C59	1-101-006-00	CERAMIC	0.047MF		50V
C60	1-101-006-00	CERAMIC	0.047MF		50V
C61	1-123-316-00	ELECT	10MF	20%	16V
C62	1-123-320-00	ELECT	100MF	20%	16V
C63	1-101-006-00	CERAMIC	0.047MF		50V
C64	1-123-320-00	ELECT	100MF	20%	16V
C65	1-101-006-00	CERAMIC	0.047MF		50V
C66	1-123-319-00	ELECT	47MF	20%	16V
C67	1-123-319-00	ELECT	47MF	20%	16V
C68	1-123-319-00	ELECT	47MF	20%	16V
C69	1-123-319-00	ELECT	47MF	20%	16V
C70	1-123-319-00	ELECT	47MF	20%	16V
C71	1-101-006-00	CERAMIC	0.047MF		50V
C72	1-123-319-00	ELECT	47MF	20%	16V
C73	1-101-006-00	CERAMIC	0.047MF		50V
C74	1-102-973-00	CERAMIC	100PF	5%	50V
C75	1-101-004-00	CERAMIC	0.01MF		50V
C76	1-123-319-00	ELECT	47MF	20%	16V
C77	1-123-319-00	ELECT	47MF	20%	16V
C78	1-123-319-00	ELECT	47MF	20%	16V
C79	1-123-319-00	ELECT	47MF	20%	16V
C80	1-123-319-00	ELECT	47MF	20%	16V

DIODE

D1	=>8-719-931-05	DIODE EQB01-05
D2	8-719-815-55	DIODE 1S1555
D3	=>8-719-931-05	DIODE EQB01-05
D4	8-719-815-55	DIODE 1S1555
D5	=>8-719-931-05	DIODE EQB01-05
D6	8-719-815-55	DIODE 1S1555
D7	8-719-815-55	DIODE 1S1555

IC

IC1	8-757-182-20	IC CX-718D
IC2	8-757-182-20	IC CX-718D
IC3	8-759-145-58	IC UPC4558C

COIL

L1	1-407-178-XX	MICRO INDUCTOR 1UH
L2	1-407-178-XX	MICRO INDUCTOR 1UH
L3	1-407-178-XX	MICRO INDUCTOR 1UH

TRANSISTOR

Q1	8-724-375-01	TRANSISTOR 2SC403C
Q2	8-724-375-01	TRANSISTOR 2SC403C
Q3	8-724-375-01	TRANSISTOR 2SC403C

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

- =>: Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.
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CAPACITORS
- MF : μF, PF : μμF

RESISTORS
- All resistors are in ohms
- F : nonflammable

COILS
- MMH : mH, UH : μH

BD

Ref.No	Part No	Description	Remark
Q4	=>8-723-302-00	TRANSISTOR 2SK43-02	
Q5	8-729-384-48	TRANSISTOR 2SA844	
Q6	8-729-384-48	TRANSISTOR 2SA844	
Q7	8-724-375-01	TRANSISTOR 2SC403C	
Q8	8-724-375-01	TRANSISTOR 2SC403C	
Q9	=>8-723-302-00	TRANSISTOR 2SK43-02	
Q10	8-729-384-48	TRANSISTOR 2SA844	
Q11	8-724-375-01	TRANSISTOR 2SC403C	
Q12	8-724-375-01	TRANSISTOR 2SC403C	
Q13	8-729-384-48	TRANSISTOR 2SA844	
Q14	8-724-375-01	TRANSISTOR 2SC403C	
Q15	8-724-375-01	TRANSISTOR 2SC403C	
Q16	8-724-375-01	TRANSISTOR 2SC403C	
Q17	=>8-723-302-00	TRANSISTOR 2SK43-02	
Q18	8-729-384-48	TRANSISTOR 2SA844	
Q19	8-724-375-01	TRANSISTOR 2SC403C	
Q20	8-724-375-01	TRANSISTOR 2SC403C	
Q21	8-724-375-01	TRANSISTOR 2SC403C	
Q22	=>8-723-302-00	TRANSISTOR 2SK43-02	
Q23	8-729-384-48	TRANSISTOR 2SA844	
Q24	8-729-384-48	TRANSISTOR 2SA844	
Q25	8-724-375-01	TRANSISTOR 2SC403C	
Q26	8-724-375-01	TRANSISTOR 2SC403C	
Q27	=>8-723-302-00	TRANSISTOR 2SK43-02	
Q28	8-729-384-48	TRANSISTOR 2SA844	
Q29	8-724-375-01	TRANSISTOR 2SC403C	
Q30	8-724-375-01	TRANSISTOR 2SC403C	
Q31	8-729-384-48	TRANSISTOR 2SA844	
Q32	8-724-375-01	TRANSISTOR 2SC403C	
Q33	8-724-375-01	TRANSISTOR 2SC403C	
Q34	8-724-375-01	TRANSISTOR 2SC403C	
Q35	=>8-723-302-00	TRANSISTOR 2SK43-02	
Q36	8-729-384-48	TRANSISTOR 2SA844	
Q37	8-724-375-01	TRANSISTOR 2SC403C	
Q38	8-724-375-01	TRANSISTOR 2SC403C	
Q39	8-724-375-01	TRANSISTOR 2SC403C	
Q40	=>8-723-302-00	TRANSISTOR 2SK43-02	
Q41	8-729-384-48	TRANSISTOR 2SA844	
Q42	8-729-384-48	TRANSISTOR 2SA844	
Q43	8-724-375-01	TRANSISTOR 2SC403C	
Q44	8-724-375-01	TRANSISTOR 2SC403C	
Q45	=>8-723-302-00	TRANSISTOR 2SK43-02	
Q46	8-729-384-48	TRANSISTOR 2SA844	
Q47	8-724-375-01	TRANSISTOR 2SC403C	
Q48	8-724-375-01	TRANSISTOR 2SC403C	
Q49	8-729-384-48	TRANSISTOR 2SA844	
Q50	8-724-375-01	TRANSISTOR 2SC403C	
Q51	8-724-375-01	TRANSISTOR 2SC403C	
Q52	8-724-375-01	TRANSISTOR 2SC403C	
Q53	=>8-723-302-00	TRANSISTOR 2SK43-02	
Q54	8-729-384-48	TRANSISTOR 2SA844	
Q55	8-724-375-01	TRANSISTOR 2SC403C	
Q56	8-724-375-01	TRANSISTOR 2SC403C	
Q57	8-724-375-01	TRANSISTOR 2SC403C	
Q58	=>8-723-302-00	TRANSISTOR 2SK43-02	
Q59	8-724-375-01	TRANSISTOR 2SC403C	
Q60	=>8-723-302-00	TRANSISTOR 2SK43-02	
Q61	8-729-384-48	TRANSISTOR 2SA844	
Q62	8-724-375-01	TRANSISTOR 2SC403C	
Q63	=>8-723-302-00	TRANSISTOR 2SK43-02	
Q64	8-729-384-48	TRANSISTOR 2SA844	

RESISTOR

R1	1-246-777-00	CARBON	330	5%	1/8W
R2	1-246-795-00	CARBON	10K	5%	1/8W
R3	1-246-795-00	CARBON	10K	5%	1/8W
R4	1-246-771-00	CARBON	100	5%	1/8W
R5	1-214-129-00	METAL	750	1%	1/4W
R6	1-246-783-00	CARBON	1K	5%	1/8W
R7	1-246-792-00	CARBON	5.6K	5%	1/8W
R8	1-246-783-00	CARBON	1K	5%	1/8W
R9	1-246-771-00	CARBON	100	5%	1/8W
R10	1-202-473-00	COMPOSITION	5.6M	5%	1/4W
R11	1-246-795-00	CARBON	10K	5%	1/8W
R12	1-202-473-00	COMPOSITION	5.6M	5%	1/4W
R13	1-214-126-00	METAL	560	1%	1/4W
R14	1-214-146-00	METAL	3.9K	1%	1/4W
R15	1-214-155-00	METAL	9.1K	1%	1/4W
R16	1-214-132-00	METAL	1K	1%	1/4W
R17	1-246-771-00	CARBON	100	5%	1/8W
R18	1-214-144-00	METAL	3.3K	1%	1/4W
R19	1-246-797-00	CARBON	15K	5%	1/8W
R20	1-214-136-00	METAL	1.5K	1%	1/4W
R21	1-214-145-00	METAL	3.6K	1%	1/4W
R22	1-214-144-00	METAL	3.3K	1%	1/4W
R23	1-246-771-00	CARBON	100	5%	1/8W
R24	1-246-795-00	CARBON	10K	5%	1/8W
R25	1-202-473-00	COMPOSITION	5.6M	5%	1/4W
R26	1-246-795-00	CARBON	10K	5%	1/8W
R27	1-214-134-00	METAL	1.2K	1%	1/4W
R29	1-214-162-00	METAL	18K	1%	1/4W
R30	1-246-771-00	CARBON	100	5%	1/8W
R31	1-246-791-00	CARBON	4.7K	5%	1/8W
R32	1-246-771-00	CARBON	100	5%	1/8W
R33	1-246-795-00	CARBON	10K	5%	1/8W
R34	1-246-771-00	CARBON	100	5%	1/8W
R35	1-214-123-00	METAL	430	1%	1/4W
R36	1-246-783-00	CARBON	1K	5%	1/8W
R37	1-246-792-00	CARBON	5.6K	5%	1/8W
R38	1-246-783-00	CARBON	1K	5%	1/8W
R39	1-246-771-00	CARBON	100	5%	1/8W
R40	1-202-473-00	COMPOSITION	5.6M	5%	1/4W
R41	1-246-795-00	CARBON	10K	5%	1/8W
R42	1-202-473-00	COMPOSITION	5.6M	5%	1/4W
R43	1-214-124-00	METAL	470	1%	1/4W
R44	1-214-136-00	METAL	1.5K	1%	1/4W

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

- =>: Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.

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CAPACITORS
- MF : μF, PF : μμF

RESISTORS
- All resistors are in ohms
- F : nonflammable

COILS
- MMH : mH, UH : μH

Ref.No	Part No	Description				Remark
R45	1-246-777-00	CARBON	330	5%	1/8W	
R46	1-246-795-00	CARBON	10K	5%	1/8W	
R47	1-246-795-00	CARBON	10K	5%	1/8W	
R48	1-246-771-00	CARBON	100	5%	1/8W	
R49	1-214-129-00	METAL	750	1%	1/4W	
R50	1-246-783-00	CARBON	1K	5%	1/8W	
R51	1-246-792-00	CARBON	5.6K	5%	1/8W	
R52	1-246-783-00	CARBON	1K	5%	1/8W	
R53	1-246-771-00	CARBON	100	5%	1/8W	
R54	1-202-473-00	COMPOSITION	5.6M	5%	1/4W	
R55	1-246-795-00	CARBON	10K	5%	1/8W	
R56	1-202-473-00	COMPOSITION	5.6M	5%	1/4W	
R57	1-214-126-00	METAL	560	1%	1/4W	
R58	1-214-151-00	METAL	6.2K	1%	1/4W	
R59	1-214-155-00	METAL	9.1K	1%	1/4W	
R60	1-214-132-00	METAL	1K	1%	1/4W	
R61	1-246-771-00	CARBON	100	5%	1/8W	
R62	1-214-144-00	METAL	3.3K	1%	1/4W	
R63	1-246-797-00	CARBON	15K	5%	1/8W	
R64	1-214-136-00	METAL	1.5K	1%	1/4W	
R65	1-214-145-00	METAL	3.6K	1%	1/4W	
R66	1-214-144-00	METAL	3.3K	1%	1/4W	
R67	1-246-771-00	CARBON	100	5%	1/8W	
R68	1-246-795-00	CARBON	10K	5%	1/8W	
R69	1-202-473-00	COMPOSITION	5.6M	5%	1/4W	
R70	1-246-795-00	CARBON	10K	5%	1/8W	
R71	1-214-134-00	METAL	1.2K	1%	1/4W	
R72	1-214-128-00	METAL	680	1%	1/4W	
R73	1-214-162-00	METAL	18K	1%	1/4W	
R74	1-246-771-00	CARBON	100	5%	1/8W	
R75	1-246-791-00	CARBON	4.7K	5%	1/8W	
R76	1-246-771-00	CARBON	100	5%	1/8W	
R77	1-246-795-00	CARBON	10K	5%	1/8W	
R78	1-246-771-00	CARBON	100	5%	1/8W	
R79	1-214-123-00	METAL	430	1%	1/4W	
R80	1-246-783-00	CARBON	1K	5%	1/8W	
R81	1-246-792-00	CARBON	5.6K	5%	1/8W	
R82	1-246-783-00	CARBON	1K	5%	1/8W	
R83	1-246-771-00	CARBON	100	5%	1/8W	
R84	1-202-473-00	COMPOSITION	5.6M	5%	1/4W	
R85	1-246-795-00	CARBON	10K	5%	1/8W	
R86	1-202-473-00	COMPOSITION	5.6M	5%	1/4W	
R87	1-214-124-00	METAL	470	1%	1/4W	
R88	1-214-136-00	METAL	1.5K	1%	1/4W	
R89	1-246-777-00	CARBON	330	5%	1/8W	
R90	1-246-795-00	CARBON	10K	5%	1/8W	
R91	1-246-795-00	CARBON	10K	5%	1/8W	
R92	1-246-771-00	CARBON	100	5%	1/8W	
R93	1-214-129-00	METAL	750	1%	1/4W	
R94	1-246-783-00	CARBON	1K	5%	1/8W	
R95	1-246-792-00	CARBON	5.6K	5%	1/8W	
R96	1-246-783-00	CARBON	1K	5%	1/8W	
R97	1-246-771-00	CARBON	100	5%	1/8W	
R98	1-202-473-00	COMPOSITION	5.6M	5%	1/4W	
R99	1-246-795-00	CARBON	10K	5%	1/8W	
R100	1-202-473-00	COMPOSITION	5.6M	5%	1/4W	
R101	1-214-126-00	METAL	560	1%	1/4W	
R102	1-214-146-00	METAL	3.9K	1%	1/4W	
R103	1-214-155-00	METAL	9.1K	1%	1/4W	
R104	1-214-132-00	METAL	1K	1%	1/4W	
R105	1-246-771-00	CARBON	100	5%	1/8W	
R106	1-214-144-00	METAL	3.3K	1%	1/4W	
R107	1-246-797-00	CARBON	15K	5%	1/8W	
R108	1-214-136-00	METAL	1.5K	1%	1/4W	
R109	1-214-145-00	METAL	3.6K	1%	1/4W	
R110	1-214-144-00	METAL	3.3K	1%	1/4W	
R111	1-246-771-00	CARBON	100	5%	1/8W	
R112	1-246-795-00	CARBON	10K	5%	1/8W	
R113	1-202-473-00	COMPOSITION	5.6M	5%	1/4W	
R114	1-246-795-00	CARBON	10K	5%	1/8W	
R115	1-214-134-00	METAL	1.2K	1%	1/4W	
R117	1-214-162-00	METAL	18K	1%	1/4W	
R118	1-246-771-00	CARBON	100	5%	1/8W	
R119	1-246-791-00	CARBON	4.7K	5%	1/8W	
R120	1-246-771-00	CARBON	100	5%	1/8W	
R121	1-246-795-00	CARBON	10K	5%	1/8W	
R122	1-246-771-00	CARBON	100	5%	1/8W	
R123	1-214-123-00	METAL	430	1%	1/4W	
R124	1-246-783-00	CARBON	1K	5%	1/8W	
R125	1-246-792-00	CARBON	5.6K	5%	1/8W	
R126	1-246-783-00	CARBON	1K	5%	1/8W	
R127	1-246-771-00	CARBON	100	5%	1/8W	
R128	1-202-473-00	COMPOSITION	5.6M	5%	1/4W	
R129	1-246-795-00	CARBON	10K	5%	1/8W	
R130	1-202-473-00	COMPOSITION	5.6M	5%	1/4W	
R131	1-214-124-00	METAL	470	1%	1/4W	
R132	1-214-136-00	METAL	1.5K	1%	1/4W	
R133	1-246-777-00	CARBON	330	5%	1/8W	
R134	1-246-795-00	CARBON	10K	5%	1/8W	
R135	1-246-795-00	CARBON	10K	5%	1/8W	
R136	1-246-771-00	CARBON	100	5%	1/8W	
R137	1-214-132-00	METAL	1K	1%	1/4W	
R138	1-246-783-00	CARBON	1K	5%	1/8W	
R139	1-246-792-00	CARBON	5.6K	5%	1/8W	
R140	1-246-783-00	CARBON	1K	5%	1/8W	
R141	1-246-771-00	CARBON	100	5%	1/8W	
R142	1-202-473-00	COMPOSITION	5.6M	5%	1/4W	
R143	1-246-795-00	CARBON	10K	5%	1/8W	
R144	1-202-473-00	COMPOSITION	5.6M	5%	1/4W	
R145	1-214-132-00	METAL	1K	1%	1/4W	
R146	1-246-791-00	CARBON	4.7K	5%	1/8W	
R147	1-246-771-00	CARBON	100	5%	1/8W	
R148	1-246-795-00	CARBON	10K	5%	1/8W	
R149	1-202-473-00	COMPOSITION	5.6M	5%	1/4W	
R150	1-246-799-00	CARBON	22K	5%	1/8W	
R151	1-246-799-00	CARBON	22K	5%	1/8W	

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COILS
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BD BE

Ref.No	Part No	Description				Remark
R152	1-246-795-00	CARBON	10K	5%	1/8W	
R153	1-202-473-00	COMPOSITION	5.6M	5%	1/4W	
R154	1-246-796-00	CARBON	12K	5%	1/8W	
R155	1-214-157-00	METAL	11K	1%	1/4W	
R156	1-214-179-00	METAL	91K	1%	1/4W	
R157	1-246-795-00	CARBON	10K	5%	1/8W	
R158	1-246-795-00	CARBON	10K	5%	1/8W	
R159	1-246-783-00	CARBON	1K	5%	1/8W	
R160	1-246-793-00	CARBON	6.8K	5%	1/8W	
R161	1-246-790-00	CARBON	3.9K	5%	1/8W	
R162	1-246-795-00	CARBON	10K	5%	1/8W	
R163	1-246-780-00	CARBON	560	5%	1/8W	
R164	1-246-780-00	CARBON	560	5%	1/8W	
R165	1-246-780-00	CARBON	560	5%	1/8W	
R166	1-246-771-00	CARBON	100	5%	1/8W	
R167	1-246-771-00	CARBON	100	5%	1/8W	
R168	1-246-771-00	CARBON	100	5%	1/8W	
R169	1-246-795-00	CARBON	10K	5%	1/8W	

VARIABLE RESISTOR

RV1	1-224-939-21	RES, ADJ, METAL FILM 5K
RV2	1-224-939-21	RES, ADJ, METAL FILM 5K
RV3	1-224-938-21	RES, ADJ, METAL FILM 2K
RV4	1-224-938-21	RES, ADJ, METAL FILM 2K

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♦:A-1135-084-A	BE BOARD, COMPLETE		E-251
♦:4-335-908-00	WASHER (S), FITTING, CONTROL		
♦:4-335-915-00	HEAT SINK (BE-2)		
♦:4-335-916-00	HEAT SINK (BE-1)		
♦:4-335-925-00	GUIDE, TRANSISTOR		

CONNECTOR

BE1	♦:1-508-796-11	PIN, CONNECTOR 2P
BE2	♦:1-508-796-11	PIN, CONNECTOR 2P
BE3	♦:1-508-796-11	PIN, CONNECTOR 2P

CAPACITOR

C2	1-123-316-00	ELECT	10MF	20%	16V
C3	1-101-006-00	CERAMIC	0.047MF		50V
C4	1-123-332-00	ELECT	47MF	20%	25V
C5	1-108-389-00	MYLAR	0.1MF	10%	100V
C6	1-123-352-00	ELECT	1MF	20%	50V
C7	1-101-004-00	CERAMIC	0.01MF		50V
C8	1-108-389-00	MYLAR	0.1MF	10%	100V
C9	1-101-004-00	CERAMIC	0.01MF		50V
C10	1-107-045-00	MICA	3.9PF	0.5PF	500V
C11	1-101-004-00	CERAMIC	0.01MF		50V
C12	1-108-385-00	MYLAR	0.047MF	10%	100V
C13	1-101-004-00	CERAMIC	0.01MF		50V
C14	1-101-004-00	CERAMIC	0.01MF		50V
C15	1-108-385-00	MYLAR	0.047MF	10%	100V
C16	1-101-004-00	CERAMIC	0.01MF		50V
C18	1-101-004-00	CERAMIC	0.01MF		50V
C21	1-123-316-00	ELECT	10MF	20%	16V
C22	1-101-006-00	CERAMIC	0.047MF		50V
C23	1-123-332-00	ELECT	47MF	20%	25V
C24	1-108-389-00	MYLAR	0.1MF	10%	100V
C25	1-123-352-00	ELECT	1MF	20%	50V
C26	1-101-004-00	CERAMIC	0.01MF		50V
C27	1-108-389-00	MYLAR	0.1MF	10%	100V
C28	1-101-004-00	CERAMIC	0.01MF		50V
C29	1-107-045-00	MICA	3.9PF	0.5PF	500V
C30	1-101-004-00	CERAMIC	0.01MF		50V
C31	1-108-385-00	MYLAR	0.047MF	10%	100V
C32	1-101-004-00	CERAMIC	0.01MF		50V
C33	1-101-004-00	CERAMIC	0.01MF		50V
C34	1-108-385-00	MYLAR	0.047MF	10%	100V
C35	1-101-004-00	CERAMIC	0.01MF		50V
C37	1-101-004-00	CERAMIC	0.01MF		50V
C40	1-123-316-00	ELECT	10MF	20%	16V
C41	1-101-006-00	CERAMIC	0.047MF		50V
C42	1-123-332-00	ELECT	47MF	20%	25V
C43	1-108-389-00	MYLAR	0.1MF	10%	100V
C44	1-123-352-00	ELECT	1MF	20%	50V
C45	1-101-004-00	CERAMIC	0.01MF		50V
C46	1-108-389-00	MYLAR	0.1MF	10%	100V
C47	1-101-004-00	CERAMIC	0.01MF		50V
C48	1-107-045-00	MICA	3.9PF	0.5PF	500V
C49	1-101-004-00	CERAMIC	0.01MF		50V
C50	1-108-385-00	MYLAR	0.047MF	10%	100V
C51	1-101-004-00	CERAMIC	0.01MF		50V
C52	1-101-004-00	CERAMIC	0.01MF		50V
C53	1-108-385-00	MYLAR	0.047MF	10%	100V
C54	1-101-004-00	CERAMIC	0.01MF		50V
C56	1-101-004-00	CERAMIC	0.01MF		50V
C58	1-123-320-00	ELECT	100MF	20%	16V
C59	1-123-320-00	ELECT	100MF	20%	16V
C60	1-123-320-00	ELECT	100MF	20%	16V
C61	1-123-320-00	ELECT	100MF	20%	16V
C62	1-123-319-00	ELECT	47MF	20%	16V
C63	1-123-319-00	ELECT	47MF	20%	16V
C64	1-123-319-00	ELECT	47MF	20%	16V
C65	1-123-319-00	ELECT	47MF	20%	16V
C66	1-123-319-00	ELECT	47MF	20%	16V
C67	1-123-319-00	ELECT	47MF	20%	16V
C68	1-123-384-00	ELECT	10MF	20%	100V
C69	1-123-344-00	ELECT	47MF	20%	35V
C70	1-101-006-00	CERAMIC	0.047MF		50V
C71	1-101-006-00	CERAMIC	0.047MF		50V
C72	1-101-006-00	CERAMIC	0.047MF		50V
C73	1-101-006-00	CERAMIC	0.047MF		50V
C74	1-101-006-00	CERAMIC	0.047MF		50V
C75	1-101-006-00	CERAMIC	0.047MF		50V
C76	1-123-320-00	ELECT	100MF	20%	16V
C77	1-123-320-00	ELECT	100MF	20%	16V

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RESISTORS
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COILS
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Ref.No	Part No	Description				Remark
C78	1-123-319-00	ELECT	47MF	20%	16V	
C79	1-123-319-00	ELECT	47MF	20%	16V	
C80	1-123-319-00	ELECT	47MF	20%	16V	
C81	1-123-344-00	ELECT	47MF	20%	35V	
C82	1-123-344-00	ELECT	47MF	20%	35V	
C83	1-123-384-00	ELECT	10MF	20%	100V	
C84	1-123-384-00	ELECT	10MF	20%	100V	
		TRIMMER				
CV1	1-141-147-XX	CAP,TRIMMER	15PF			
CV2	1-141-147-XX	CAP,TRIMMER	15PF			
CV3	1-141-147-XX	CAP,TRIMMER	15PF			
		DIODE				
D1	=>8-719-931-05	DIODE EQB01-05				
D2	=>8-719-931-06	DIODE EQB01-06				
D3	8-719-815-55	DIODE 1S1555				
D4	8-719-815-55	DIODE 1S1555				
D5	8-719-815-55	DIODE 1S1555				
D6	=>8-719-200-02	DIODE 10E2				
D7	=>8-719-931-05	DIODE EQB01-05				
D8	=>8-719-931-06	DIODE EQB01-06				
D9	8-719-815-55	DIODE 1S1555				
D10	8-719-815-55	DIODE 1S1555				
D11	8-719-815-55	DIODE 1S1555				
D12	=>8-719-200-02	DIODE 10E2				
D13	=>8-719-931-05	DIODE EQB01-05				
D14	=>8-719-931-06	DIODE EQB01-06				
D15	8-719-815-55	DIODE 1S1555				
D16	8-719-815-55	DIODE 1S1555				
D17	8-719-815-55	DIODE 1S1555				
D18	=>8-719-200-02	DIODE 10E2				
		IC				
IC1	8-759-145-58	IC UPC4558C				
IC2	8-759-145-58	IC UPC4558C				
IC3	8-759-145-58	IC UPC4558C				
		TRANSISTOR				
Q1	8-729-384-48	TRANSISTOR 2SA844				
Q2	8-724-375-01	TRANSISTOR 2SC403C				
Q3	8-729-384-48	TRANSISTOR 2SA844				
Q4	8-729-384-48	TRANSISTOR 2SA844				
Q5	=>8-725-800-00	TRANSISTOR 2SC1128				
Q6	8-729-322-78	TRANSISTOR 2SC2278				
Q7	=>8-729-366-81	TRANSISTOR 2SD668				
Q8	=>8-729-364-81	TRANSISTOR 2SB648				
Q9	=>8-723-302-00	TRANSISTOR 2SK43-02				
Q10	8-761-622-00	TRANSISTOR 2SC1636				
Q11	=>8-723-302-00	TRANSISTOR 2SK43-02				
Q13	=>8-723-302-00	TRANSISTOR 2SK43-02				
Q14	8-729-384-48	TRANSISTOR 2SA844				
Q15	8-724-375-01	TRANSISTOR 2SC403C				

Ref.No	Part No	Description				Remark
Q16	8-729-384-48	TRANSISTOR 2SA844				
Q17	8-729-384-48	TRANSISTOR 2SA844				
Q18	=>8-725-800-00	TRANSISTOR 2SC1128				
Q19	8-729-322-78	TRANSISTOR 2SC2278				
Q20	=>8-729-366-81	TRANSISTOR 2SD668				
Q21	=>8-729-364-81	TRANSISTOR 2SB648				
Q22	=>8-723-302-00	TRANSISTOR 2SK43-02				
Q23	8-761-622-00	TRANSISTOR 2SC1636				
Q24	=>8-723-302-00	TRANSISTOR 2SK43-02				
Q26	=>8-723-302-00	TRANSISTOR 2SK43-02				
Q27	8-729-384-48	TRANSISTOR 2SA844				
Q28	8-724-375-01	TRANSISTOR 2SC403C				
Q29	8-729-384-48	TRANSISTOR 2SA844				
Q30	8-729-384-48	TRANSISTOR 2SA844				
Q31	=>8-725-800-00	TRANSISTOR 2SC1128				
Q32	8-729-322-78	TRANSISTOR 2SC2278				
Q33	=>8-729-366-81	TRANSISTOR 2SD668				
Q34	=>8-729-364-81	TRANSISTOR 2SB648				
Q35	=>8-723-302-00	TRANSISTOR 2SK43-02				
Q36	8-761-622-00	TRANSISTOR 2SC1636				
Q37	=>8-723-302-00	TRANSISTOR 2SK43-02				
Q39	=>8-723-302-00	TRANSISTOR 2SK43-02				
		RESISTOR				
R1	1-246-771-00	CARBON	100	5%	1/8W	
R2	1-214-128-00	METAL	680	1%	1/4W	
R3	1-214-138-00	METAL	1.8K	1%	1/4W	
R4	1-246-776-00	CARBON	270	5%	1/8W	
R5	1-246-788-00	CARBON	2.7K	5%	1/8W	
R6	1-246-771-00	CARBON	100	5%	1/8W	
R7	1-214-136-00	METAL	1.5K	1%	1/4W	
R8	1-214-150-00	METAL	5.6K	1%	1/4W	
R9	1-246-793-00	CARBON	6.8K	5%	1/8W	
R10	1-246-797-00	CARBON	15K	5%	1/8W	
R11	1-246-771-00	CARBON	100	5%	1/8W	
R12	1-246-796-00	CARBON	12K	5%	1/8W	
R13	1-246-771-00	CARBON	100	5%	1/8W	
R14	1-206-737-00	METAL	3.3K	5%	3W	F
R15	1-214-142-00	METAL	2.7K	1%	1/4W	
R16	1-214-116-00	METAL	220	1%	1/4W	
R17	1-214-116-00	METAL	220	1%	1/4W	
R18	1-246-759-00	CARBON	10	5%	1/8W	
R19	1-246-759-00	CARBON	10	5%	1/8W	
R20	1-212-692-00	METAL	39K	1%	1/2W	
R21	1-214-180-00	METAL	100K	1%	1/4W	
R22	1-214-151-00	METAL	6.2K	1%	1/4W	
R23	1-246-795-00	CARBON	10K	5%	1/8W	
R24	1-202-473-00	COMPOSITION	5.6M	5%	1/4W	
R25	1-246-790-00	CARBON	3.9K	5%	1/8W	
R26	1-214-178-00	METAL	82K	1%	1/4W	
R27	1-214-175-00	METAL	62K	1%	1/4W	
R28	1-214-173-00	METAL	51K	1%	1/4W	
R29	1-214-162-00	METAL	18K	1%	1/4W	

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BE

Ref.No	Part No	Description				Remark
R30	1-246-795-00	CARBON	10K	5%	1/8W	
R31	1-214-180-00	METAL	100K	1%	1/4W	
R32	1-214-151-00	METAL	6.2K	1%	1/4W	
R33	1-246-795-00	CARBON	10K	5%	1/8W	
R34	1-246-795-00	CARBON	10K	5%	1/8W	
R35	1-202-473-00	COMPOSITION	5.6M	5%	1/4W	
R36	1-214-170-00	METAL	39K	1%	1/4W	
R37	1-246-795-00	CARBON	10K	5%	1/8W	
R38	1-202-473-00	COMPOSITION	5.6M	5%	1/4W	
R39	1-246-795-00	CARBON	10K	5%	1/8W	
R40	1-214-162-00	METAL	18K	1%	1/4W	
R41	1-214-179-00	METAL	91K	1%	1/4W	
R42	1-214-149-00	METAL	5.1K	1%	1/4W	
R43	1-246-795-00	CARBON	10K	5%	1/8W	
R44	1-246-771-00	CARBON	100	5%	1/8W	
R45	1-214-128-00	METAL	680	1%	1/4W	
R46	1-214-138-00	METAL	1.8K	1%	1/4W	
R47	1-246-776-00	CARBON	270	5%	1/8W	
R48	1-246-788-00	CARBON	2.7K	5%	1/8W	
R49	1-246-771-00	CARBON	100	5%	1/8W	
R50	1-214-136-00	METAL	1.5K	1%	1/4W	
R51	1-214-150-00	METAL	5.6K	1%	1/4W	
R52	1-246-793-00	CARBON	6.8K	5%	1/8W	
R53	1-246-797-00	CARBON	15K	5%	1/8W	
R54	1-246-771-00	CARBON	100	5%	1/8W	
R55	1-246-796-00	CARBON	12K	5%	1/8W	
R56	1-246-771-00	CARBON	100	5%	1/8W	
R57	1-206-737-00	METAL	3.3K	5%	3W	F
R58	1-214-142-00	METAL	2.7K	1%	1/4W	
R59	1-214-116-00	METAL	220	1%	1/4W	
R60	1-214-116-00	METAL	220	1%	1/4W	
R61	1-246-759-00	CARBON	10	5%	1/8W	
R62	1-246-759-00	CARBON	10	5%	1/8W	
R63	1-212-692-00	METAL	39K	1%	1/2W	
R64	1-214-180-00	METAL	100K	1%	1/4W	
R65	1-214-151-00	METAL	6.2K	1%	1/4W	
R66	1-246-795-00	CARBON	10K	5%	1/8W	
R67	1-202-473-00	COMPOSITION	5.6M	5%	1/4W	
R68	1-246-790-00	CARBON	3.9K	5%	1/8W	
R69	1-214-178-00	METAL	82K	1%	1/4W	
R70	1-214-175-00	METAL	62K	1%	1/4W	
R71	1-214-173-00	METAL	51K	1%	1/4W	
R72	1-214-162-00	METAL	18K	1%	1/4W	
R73	1-246-795-00	CARBON	10K	5%	1/8W	
R74	1-214-180-00	METAL	100K	1%	1/4W	
R75	1-214-151-00	METAL	6.2K	1%	1/4W	
R76	1-246-795-00	CARBON	10K	5%	1/8W	
R77	1-246-795-00	CARBON	10K	5%	1/8W	
R78	1-202-473-00	COMPOSITION	5.6M	5%	1/4W	
R79	1-214-172-00	METAL	47K	1%	1/4W	
R80	1-246-795-00	CARBON	10K	5%	1/8W	
R81	1-202-473-00	COMPOSITION	5.6M	5%	1/4W	
R82	1-246-795-00	CARBON	10K	5%	1/8W	
R83	1-214-162-00	METAL	18K.	1%	1/4W	
R84	1-214-179-00	METAL	91K	1%	1/4W	
R85	1-214-149-00	METAL	5.1K	1%	1/4W	
R86	1-246-795-00	CARBON	10K	5%	1/8W	
R87	1-246-771-00	CARBON	100	5%	1/8W	
R88	1-214-128-00	METAL	680	1%	1/4W	
R89	1-214-138-00	METAL	1.8K	1%	1/4W	
R90	1-246-776-00	CARBON	270	5%	1/8W	
R91	1-246-788-00	CARBON	2.7K	5%	1/8W	
R92	1-246-771-00	CARBON	100	5%	1/8W	
R93	1-214-136-00	METAL	1.5K	1%	1/4W	
R94	1-214-150-00	METAL	5.6K	1%	1/4W	
R95	1-246-793-00	CARBON	6.8K	5%	1/8W	
R96	1-246-797-00	CARBON	15K	5%	1/8W	
R97	1-246-771-00	CARBON	100	5%	1/8W	
R98	1-246-796-00	CARBON	12K	5%	1/8W	
R99	1-246-771-00	CARBON	100	5%	1/8W	
R100	1-206-737-00	METAL	3.3K	5%	3W	F
R101	1-214-142-00	METAL	2.7K	1%	1/4W	
R102	1-214-116-00	METAL	220	1%	1/4W	
R103	1-214-116-00	METAL	220	1%	1/4W	
R104	1-246-759-00	CARBON	10	5%	1/8W	
R105	1-246-759-00	CARBON	10	5%	1/8W	
R106	1-212-692-00	METAL	39K	1%	1/2W	
R107	1-214-180-00	METAL	100K	1%	1/4W	
R108	1-214-151-00	METAL	6.2K	1%	1/4W	
R109	1-246-795-00	CARBON	10K	5%	1/8W	
R110	1-202-473-00	COMPOSITION	5.6M	5%	1/4W	
R111	1-246-790-00	CARBON	3.9K	5%	1/8W	
R112	1-214-178-00	METAL	82K	1%	1/4W	
R113	1-214-175-00	METAL	62K	1%	1/4W	
R114	1-214-173-00	METAL	51K	1%	1/4W	
R115	1-214-162-00	METAL	18K	1%	1/4W	
R116	1-246-795-00	CARBON	10K	5%	1/8W	
R117	1-214-180-00	METAL	100K	1%	1/4W	
R118	1-214-151-00	METAL	6.2K	1%	1/4W	
R119	1-246-795-00	CARBON	10K	5%	1/8W	
R120	1-246-795-00	CARBON	10K	5%	1/8W	
R121	1-202-473-00	COMPOSITION	5.6M	5%	1/4W	
R122	1-214-174-00	METAL	56K	1%	1/4W	
R123	1-246-795-00	CARBON	10K	5%	1/8W	
R124	1-202-473-00	COMPOSITION	5.6M	5%	1/4W	
R125	1-246-795-00	CARBON	10K	5%	1/8W	
R126	1-214-162-00	METAL	18K	1%	1/4W	
R127	1-214-179-00	METAL	91K	1%	1/4W	
R128	1-214-149-00	METAL	5.1K	1%	1/4W	
R129	1-246-795-00	CARBON	10K	5%	1/8W	

VARIABLE RESISTOR

RV1	1-226-698-00	RES, ADJ, CERMET	10K
RV2	1-224-941-21	RES, ADJ, METAL FILM	20K
RV3	1-226-698-00	RES, ADJ, CERMET	10K
RV4	1-224-941-21	RES, ADJ, METAL FILM	20K

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- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

CAPACITORS
- MF : μF, PF : μμF

RESISTORS
- All resistors are in ohms
- F : nonflammable

COILS
- MMH : mH, UH : μH

Ref.No	Part No	Description			Remark
RV5	1-226-698-00	RES, ADJ, CERMET 10K			
RV6	1-224-941-21	RES, ADJ, METAL FILM 20K			
**********					
♦:A-1135-116-A		BA BOARD, COMPLETE			P E-255
♦:A-1135-127-A		BA BOARD, COMPLETE			PM E-255
♦:4-335-908-00		WASHER (S), FITTING, CONTROL			
		CAPACITOR			
C1	1-101-006-00	CERAMIC	0.047MF		50V
C2	1-109-683-71	MICA	270PF	1%	500V
C3	1-109-673-71	MICA	100PF	1%	500V
C4	1-109-656-00	MICA	20PF	1%	500V
C5	1-102-520-00	CERAMIC	39PF	5%	50V
C6	1-101-004-00	CERAMIC	0.01MF		50V
C7	1-101-004-00	CERAMIC	0.01MF		50V
C8	1-123-316-00	ELECT	10MF	20%	16V
C9	1-123-316-00	ELECT	10MF	20%	16V
C10	1-101-004-00	CERMIC	0.01MF		50V
C11	1-101-004-00	CERAMIC	0.01MF		50V
C12	1-101-004-00	CERAMIC	0.01MF		50V
C13	1-161-024-51	CERAMIC	0.082MF	10%	25V
C14	1-109-686-71	MICA	360PF	1%	500V P
C14	1-109-687-00	MICA	390PF	1%	500V PM
C15	1-109-685-00	MICA	330PF	1%	500V P
C15	1-109-687-00	MICA	390PF	1%	500V PM
C16	1-109-681-71	MICA	220PF	1%	500V P
C16	1-109-685-00	MICA	330PF	1%	500V PM
C17	1-101-006-00	CERMIC	0.047MF		50V
C18	1-101-006-00	CERAMIC	0.047MF		50V
C19	1-102-679-00	CERAMIC	120PF	5%	50V P
C19	1-102-848-00	CERAMIC	180PF	5%	50V PM
C20	1-102-679-00	CERAMIC	120PF	5%	50V P
C20	1-102-848-00	CERAMIC	180PF	5%	50V PM
C21	1-101-006-00	CERAMIC	0.047MF		50V
C22	1-102-520-00	CERAMIC	39PF	5%	50V P
C22	1-102-852-00	CERAMIC	47PF	5%	50V PM
C23	1-102-508-00	CERAMIC	10PF	0.5PF	50V
C24	1-101-006-00	CERAMIC	0.047MF		50V
C25	1-102-678-00	CERAMIC	100PF	5%	50V P
C25	1-102-888-00	CERAMIC	150PF	5%	50V PM
C26	1-101-006-00	CERAMIC	0.047MF		50V
C27	1-101-006-00	CERAMIC	0.047MF		50V
C28	1-101-006-00	CERAMIC	0.047MF		50V
C29	1-101-004-00	CERAMIC	0.01MF		50V
C30	1-121-257-00	ELECT NONPOLA	4.7MF		16V
C31	1-123-352-00	ELECT	1MF	20%	50V P
C31	1-123-351-00	ELECT	0.47	20%	50V PM
C32	1-123-352-00	ELECT	1MF	20%	50V P
C32	1-123-351-00	ELECT	0.47	20%	50V PM
C33	1-121-257-00	ELECT NONPOLA	4.7MF		16V
C34	1-108-379-00	MYLAR	0.015MF	10%	100V
C35	1-102-824-00	CERAMIC	430PF	5%	50V
C36	1-101-006-00	CERAMIC	0.047MF		50V
C37	1-109-683-71	MICA	270PF	1%	500V
C38	1-109-673-71	MICA	100PF	1%	500V
C39	1-109-656-00	MICA	20PF	1%	500V
C40	1-109-683-71	MICA	270PF	1%	500V
C41	1-109-673-71	MICA	100PF	1%	500V
C42	1-109-656-00	MICA	20PF	1%	500V
C43	1-101-006-00	CERAMIC	0.047MF		50V
C45	1-101-006-00	CERAMIC	0.047MF		50V
C46	1-101-006-00	CERAMIC	0.047MF		50V
C47	1-101-006-00	CERAMIC	0.047MF		50V
C48	1-101-006-00	CERAMIC	0.047MF		50V
C49	1-101-006-00	CERAMIC	0.047MF		50V
C50	1-102-523-00	CERAMIC	56PF	5%	50V
C51	1-109-683-71	MICA	270PF	1%	500V
C52	1-109-673-71	MICA	100PF	1%	500V
C53	1-109-656-00	MICA	20PF	1%	500V
C54	1-101-006-00	CERAMIC	0.047MF		50V
C55	1-101-880-00	CERAMIC	47PF	5%	50V
C56	1-161-024-51	CERAMIC	0.082MF	10%	25V
C57	1-101-004-00	CERAMIC	0.01MF		50V
C58	1-101-006-00	CERAMIC	0.047MF		50V
C59	1-108-383-00	MYLAR	0.033MF	10%	100V
C60	1-101-001-00	CERAMIC	0.001MF		50V
C61	1-102-531-00	CERAMIC	150PF	5%	50V
C62	1-102-531-00	CERAMIC	150PF	5%	50V
C63	1-102-531-00	CERAMIC	150PF	5%	50V
C64	1-123-316-00	ELECT	10MF	20%	16V
C65	1-123-316-00	ELECT	10MF	20%	16V
C66	1-123-316-00	ELECT	10MF	20%	16V
C67	1-123-316-00	ELECT	10MF	20%	16V
C68	1-101-006-00	CERAMIC	0.047MF		50V
C69	1-101-006-00	CERAMIC	0.047MF		50V
C70	1-123-316-00	ELECT	10MF	20%	16V
C71	1-123-316-00	ELECT	10MF	20%	16V
C73	1-123-316-00	ELECT	10MF	20%	16V
C74	1-101-006-00	CERAMIC	0.047MF		50V
C75	1-123-316-00	ELECT	10MF	20%	16V
C76	1-101-006-00	CERAMIC	0.047MF		50V
C77	1-123-316-00	ELECT	10MF	20%	16V
C78	1-123-316-00	ELECT	10MF	20%	16V
C79	1-123-316-00	ELECT	10MF	20%	16V
C80	1-123-316-00	ELECT	10MF	20%	16V
C81	1-123-316-00	ELECT	10MF	20%	16V
C82	1-101-006-00	CERAMIC	0.047MF		50V
C83	1-101-006-00	CERAMIC	0.047MF		50V
C84	1-123-316-00	ELECT	10MF	20%	16V
C85	1-101-006-00	CERAMIC	0.047MF		50V
C86	1-123-316-00	ELECT	10MF	20%	16V
C87	1-123-316-00	ELECT	10MF	20%	16V
C88	1-123-316-00	ELECT	10MF	20%	16V

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RESISTORS
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- F : nonflammable

COILS
- MMH : mH, UH : μH

- P : BVM-1301P
  PM: BVM-1301PM

BA

Ref.No	Part No	Description				Remark
C89	1-123-316-00	ELECT	10MF	20%	16V	
C90	1-123-316-00	ELECT	10MF	20%	16V	
C91	1-123-316-00	ELECT	10MF	20%	16V	
C92	1-123-316-00	ELECT	10MF	20%	16V	
C93	1-123-316-00	ELECT	10MF	20%	16V	
		TRIMMER				
CV1	1-141-247-00	CAP, TRIMMER				
		DIODE				
D1	8-712-500-00	DIODE 1T25-0				
D2	=>8-719-156-25	DIODE RD5.6E-B2Z				
D3	=>8-719-156-25	DIODE RD5.6E-B2Z				
D4	8-719-815-55	DIODE 1S1555				
D5	8-719-815-55	DIODE 1S1555				
D6	8-719-815-55	DIODE 1S1555				
D7	8-719-815-55	DIODE 1S1555				
D8	=>8-719-422-21	DIODE 1T22AM				PM
D9	8-719-815-55	DIODE 1S1555				PM
		IC				
IC1	8-759-156-20	IC UPC562C				
IC2	8-759-903-16	IC LM318P				
IC3	8-759-145-58	IC UPC4558C				
IC4	8-759-240-53	IC TC4053BP				
IC5	8-759-145-58	IC UPC4558C				
IC6	8-759-145-58	IC UPC4558C				
IC7	8-759-145-58	IC UPC4558C				
IC8	8-759-901-32	IC SN74LS132N				
IC9	8-759-156-20	IC UPC562C				
IC10	8-759-907-33	IC UA733CN				
IC11	8-759-903-16	IC LM318P				
IC12	8-759-903-16	IC LM318P				
IC13	8-759-145-58	IC UPC4558C				
IC14	8-759-901-23	IC SN74LS123N				
IC15	8-759-900-26	IC SN74LS26N				
IC16	8-759-900-73	IC SN74LS73AN				
IC17	8-751-300-00	IC CX-130				
		COIL				
L1	1-408-485-00	MICRO INDUCTOR 100UH				
L2	1-408-484-00	MICRO INDUCTOR 47UH				
L3	1-407-571-00	COIL, VARIABLE 22MH				
L4	1-407-575-00	COIL, VARIABLE 100MH				
L5	1-407-573-00	COIL, VARIABLE 47MH				
L6	1-407-575-00	COIL, VARIABLE 100MH				
L7	1-407-573-00	COIL, VARIABLE 47MH				
L8	1-408-485-00	MICRO INDUCTOR 100UH				
L9	1-408-484-00	MICRO INDUCTOR 47UH				
L10	1-407-169-XX	MICRO INDUCTOR 100UH				
L11	1-407-169-XX	MICRO INDUCTOR 100UH				

Ref.No	Part No	Description				Remark
		TRANSISTOR				
Q1	8-724-375-01	TRANSISTOR 2SC403C				
Q2	8-724-375-01	TRANSISTOR 2SC403C				
Q3	8-724-375-01	TRANSISTOR 2SC403C				
Q4	=>8-723-301-01	TRANSISTOR 2SK43-11				
Q5	8-729-348-48	TRANSISTOR 2SA844				
Q6	=>8-723-301-01	TRANSISTOR 2SK43-11				
Q7	8-724-375-01	TRANSISTOR 2SC403C				
Q8	8-724-375-01	TRANSISTOR 2SC403C				
Q9	8-724-375-01	TRANSISTOR 2SC403C				
Q10	8-724-375-01	TRANSISTOR 2SC403C				
Q11	8-729-348-48	TRANSISTOR 2SA844				
Q12	8-724-375-01	TRANSISTOR 2SC403C				
Q13	8-729-348-48	TRANSISTOR 2SA844				
Q14	8-724-375-01	TRANSISTOR 2SC403C				
Q15	8-729-348-48	TRANSISTOR 2SA844				
Q16	8-724-375-01	TRANSISTOR 2SC403C				
Q17	8-724-375-01	TRANSISTOR 2SC403C				
Q18	8-724-375-01	TRANSISTOR 2SC403C				
Q19	8-724-375-01	TRANSISTOR 2SC403C				
Q20	8-724-375-01	TRANSISTOR 2SC403C				
Q21	8-724-375-01	TRANSISTOR 2SC403C				
Q22	8-724-375-01	TRANSISTOR 2SC403C				
Q23	8-724-375-01	TRANSISTOR 2SC403C				
Q24	8-729-348-48	TRANSISTOR 2SA844				
Q25	8-724-375-01	TRANSISTOR 2SC403C				
Q26	=>8-723-301-01	TRANSISTOR 2SK43-11				
Q27	=>8-723-301-01	TRANSISTOR 2SK43-11				
Q28	8-729-663-47	TRANSISTOR 2SC1364				
		RESISTOR				
R1	1-246-771-00	CARBON	100	5%	1/8W	
R2	1-246-791-00	CARBON	4.7K	5%	1/8W	
R3	1-246-771-00	CARBON	100	5%	1/8W	
R4	1-246-791-00	CARBON	4.7K	5%	1/8W	
R5	1-246-791-00	CARBON	4.7K	5%	1/8W	
R6	1-246-796-00	CARBON	12K	5%	1/8W	
R7	1-246-788-00	CARBON	2.7K	5%	1/8W	
R8	1-214-130-00	METAL	820	1%	1/4W	
R9	1-214-101-00	METAL	51	1%	1/4W	
R10	1-214-130-00	METAL	820	1%	1/4W	
R11	1-214-101-00	METAL	51	1%	1/4W	
R12	1-246-788-00	CARBON	2.7K	5%	1/8W	
R13	1-246-845-00	CARBON	1.3K	5%	1/8W	
R14	1-246-783-00	CARBON	1K	5%	1/8W	
R15	1-246-790-00	CARBON	3.9K	5%	1/8W	
R16	1-246-791-00	CARBON	4.7K	5%	k/8W	
R17	1-214-180-00	METAL	100K	1%	1/4W	
R18	1-214-132-00	METAL	1K	1%	1/4W	
R19	1-246-795-00	CARBON	10K	5%	1/8W	
R20	1-246-795-00	CARBON	10K	5%	1/8W	
R21	1-202-473-00	COMPOSITION	5.6M	5%	1/4W	

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CAPACITORS
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RESISTORS
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- F : nonflammable

COILS
- MMH : mH, UH : μH

- P : BVM-1301P
  PM: BVM-1301PM

Ref.No	Part No	Description				Remark
R22	1-246-771-00	CARBON	100	5%	1/8W	
R23	1-246-771-00	CARBON	100	5%	1/8W	
R24	1-246-795-00	CARBON	10K	5%	1/8W	
R25	1-246-789-00	CARBON	3.3K	5%	1/8W	
R26	1-246-788-00	CARBON	2.7K	5%	1/8W	
R27	1-246-795-00	CARBON	10K	5%	1/8W	
R28	1-214-160-00	METAL	15K	1%	1/4W	
R29	1-214-160-00	METAL	15K	1%	1/4W	
R30	1-214-166-00	METAL	27K	1%	1/4W	
R31	1-214-168-00	METAL	33K	1%	1/4W	
R32	1-214-162-00	METAL	18K	1%	1/4W	
R33	1-214-177-00	METAL	75K	1%	1/4W	
R34	1-246-803-00	CARBON	47K	5%	1/8W	
R35	1-246-803-00	CARBON	47K	5%	1/8W	
R36	1-246-795-00	CARBON	10K	5%	1/8W	
R37	1-246-807-00	CARBON	100K	5%	1/8W	
R38	1-246-801-00	CARBON	33K	5%	1/8W	
R39	1-246-801-00	CARBON	33K	5%	1/8W	
R40	1-247-061-00	CARBON	910K	5%	1/8W	
R41	1-246-800-00	CARBON	27K	5%	1/8W	
R42	1-202-383-17	COMPOSITION	1K	5%	1/4W	
R43	1-246-808-00	CARBON	120K	5%	1/8W	
R44	1-246-797-00	CARBON	15K	5%	1/8W	
R45	1-246-771-00	CARBON	100	5%	1/8W	
R46	1-246-787-00	CARBON	2.2K	5%	1/8W	
R47	1-246-783-00	CARBON	1K	5%	1/8W	
R48	1-246-785-00	CARBON	1.5K	5%	1/8W	
R49	1-246-771-00	CARBON	100	5%	1/8W	
R50	1-214-164-00	METAL	22K	1%	1/4W	
R51	1-246-771-00	CARBON	100	5%	1/8W	
R52	1-246-771-00	CARBON	100	5%	1/8W	
R53	1-214-154-00	METAL	8.2K	1%	1/4W	
R54	1-214-139-00	METAL	2K	1%	1/4W	
R55	1-246-790-00	CARBON	3.9K	5%	1/8W	
R56	1-246-771-00	CARBON	100	5%	1/8W	
R57	1-214-136-00	METAL	1.5K	1%	1/4W	
R58	1-214-136-00	METAL	1.5K	1%	1/4W	
R59	1-214-136-00	METAL	1.5K	1%	1/4W	
R60	1-214-136-00	METAL	1.5K	1%	1/4W	
R61	1-214-129-00	METAL	750	1%	1/4W	
R62	1-246-771-00	CARBON	100	5%	1/8W	
R63	1-214-136-00	METAL	1.5K	1%	1/4W	
R64	1-246-771-00	CARBON	100	5%	1/8W	
R65	1-246-763-00	CARBON	22	5%	1/8W	
R66	1-246-785-00	CARBON	1.5K	5%	1/8W	
R67	1-214-136-00	METAL	1.5K	1%	1/4W	
R68	1-246-795-00	CARBON	10K	5%	1/8W	
R69	1-246-803-00	CARBON	47K	5%	1/8W	
R70	1-246-803-00	CARBON	47K	5%	1/8W	
R71	1-247-048-00	CARBON	390K	5%	1/8W	
R72	1-214-132-00	METAL	1K	1%	1/4W	
R73	1-247-061-00	CARBON	910K	5%	1/8W	

Ref.No	Part No	Description				Remark
R74	1-246-801-00	CARBON	33K	5%	1/8W	P
R74	1-246-791-00	CARBON	4.7K	5%	1/8W	PM
R75	1-247-048-00	CARBON	390K	1%	1/8W	
R76	1-214-132-00	METAL	1K	1%	1/4W	
R77	1-246-801-00	CARBON	33K	5%	1/8W	
R78	1-246-787-00	CARBON	2.2K	5%	1/8W	
R79	1-246-779-00	CARBON	470	5%	1/8W	
R80	1-246-791-00	CARBON	4.7K	5%	1/8W	
R81	1-246-771-00	CARBON	100	5%	1/8W	
R82	1-246-796-00	CARBON	12K	5%	1/8W	
R83	1-246-791-00	CARBON	4.7K	5%	1/8W	
R84	1-246-796-00	CARBON	12K	5%	1/8W	
R85	1-246-788-00	CARBON	2.7K	5%	1/8W	
R86	1-214-130-00	METAL	820	1%	1/4W	
R87	1-214-101-00	METAL	51	1%	1/4W	
R88	1-214-130-00	METAL	820	1%	1/4W	
R89	1-214-101-00	METAL	51	1%	1/4W	
R90	1-246-791-00	CARBON	4.7K	5%	1/8W	
R91	1-246-788-00	CARBON	2.7K	5%	1/8W	
R92	1-214-130-00	METAL	820	1%	1/4W	
R93	1-214-101-00	METAL	51	1%	1/4W	
R94	1-214-130-00	METAL	820	1%	1/4W	
R95	1-214-101-00	METAL	51	1%	1/4W	
R96	1-246-791-00	CARBON	4.7K	5%	1/8W	
R97	1-246-771-00	CARBON	100	5%	1/8W	
R98	1-246-791-00	CARBON	4.7K	5%	1/8W	
R99	1-246-785-00	CARBON	1.5K	5%	1/8W	
R100	1-246-780-00	CARBON	560	5%	1/8W	
R101	1-246-780-00	CARBON	560	5%	1/8W	
R102	1-246-791-00	CARBON	4.7K	5%	1/8W	
R103	1-246-783-00	CARBON	1K	5%	1/8W	
R104	1-246-783-00	CARBON	1K	5%	1/8W	
R105	1-246-792-00	CARBON	5.6K	5%	1/8W	
R106	1-214-130-00	METAL	820	1%	1/4W	
R107	1-214-101-00	METAL	51	1%	1/4W	
R108	1-214-130-00	METAL	820	1%	1/4W	
R109	1-214-101-00	METAL	51	1%	1/4W	
R110	1-246-785-00	CARBON	1.5K	5%	1/8W	
R111	1-246-792-00	CARBON	5.6K	5%	1/8W	
R112	1-246-771-00	CARBON	100	5%	1/8W	P
R112	1-246-778-00	CARBON	390	5%	1/8W	PM
R113	1-246-787-00	CARBON	2.2K	5%	1/8W	
R114	1-246-771-00	CARBON	100	5%	1/8W	
R115	1-246-791-00	CARBON	4.7K	5%	1/8W	
R116	1-246-795-00	CARBON	10K	5%	1/8W	
R117	1-246-852-00	CARBON	5.1K	5%	1/8W	
R118	1-246-852-00	CARBON	5.1K	5%	1/8W	
R119	1-246-795-00	CARBON	10K	5%	1/8W	
R120	1-202-473-00	COMPOSITION	5.6M	5%	1/4W	
R121	1-246-795-00	CARBON	10K	5%	1/8W	
R122	1-214-156-00	METAL	10K	1%	1/4W	
R123	1-214-180-00	METAL	100K	1%	1/4W	
R124	1-246-807-00	CARBON	100K	5%	1/8W	

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CAPACITORS
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RESISTORS
- All resistors are in ohms
- F : nonflammable

COILS
- MMH : mH, UH : μH

- P : BVM-1301P
  PM: BVM-1301PM

BA BB **Serial No. BVM-1301P : up to 10,490**
BVM-1301PM: up to 10,050

Ref.No	Part No	Description				Remark
R125	1-246-860-00	CARBON	24K	5%	1/8W	
R126	1-246-795-00	CARBON	10K	5%	1/8W	
R127	1-247-046-00	CARBON	270K	5%	1/8W	
R128	1-246-865-00	CARBON	62K	5%	1/8W	
R129	1-246-788-00	CARBON	2.7K	5%	1/8W	
R130	1-246-789-00	CARBON	3.3K	5%	1/8W	
R131	1-214-149-00	METAL	5.1K	1%	1/4W	
R132	1-214-171-00	METAL	43K	1%	1/4W	
R133	1-246-789-00	CARBON	3.3K	5%	1/8W	
R134	1-246-855-00	CARBON	9.1K	5%	1/8W	
R135	1-246-789-00	CARBON	3.3K	5%	1/8W	
R136	1-246-855-00	CARBON	9.1K	5%	1/8W	
R137	1-246-789-00	CARBON	3.3K	5%	1/8W	
R138	1-246-855-00	CARBON	9.1K	5%	1/8W	
R139	1-246-852-00	CARBON	5.1K	5%	1/8W	
		VARIABLE RESISTOR				
RV1	1-224-942-21	RES, ADJ, METAL FILM 50K				
RV2	1-224-942-21	RES, ADJ, METAL FILM 50K				
RV3	1-224-936-21	RES, ADJ, METAL FILM 500				
RV4	1-224-941-21	RES, ADJ, METAL FILM 20K				
RV5	1-224-941-21	RES, ADJ, METAL FILM 20K				
RV6	1-224-941-21	RES, ADJ, METAL FILM 20K				
RV7	1-224-941-21	RES, ADJ, METAL FILM 20K				
		TRANSFORMER				
T1	1-404-081-00	TRANSFORMER, DELAY ADJUST				
		CRYSTAL				
X1	1-527-345-00	CRYSTAL, OSC				P
X1	1-527-825-00	CRYSTAL, OSC				PM

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A-1135-291-A	BB BOARD, COMPLETE	P	E-254
A-1135-292-A	BB BOARD, COMPLETE	PM	E-254
1-526-581-00	SOCKET, IC (16P)		
4-347-110-00	CASE, SHIELD		

CAPACITOR

C1	1-123-319-00	ELECT	47MF	20%	16V
C2	1-123-317-00	ELECT	22MF	20%	16V
C3	1-101-004-00	CERAMIC	0.01MF		50V
C4	1-101-004-00	CERAMIC	0.01MF		50V
C5	1-101-004-00	CERAMIC	0.01MF		50V
C6	1-101-004-00	CERAMIC	0.01MF		50V
C7	1-101-004-00	CERAMIC	0.01MF		50V
C8	1-101-004-00	CERAMIC	0.01MF		50V
C9	1-123-351-00	ELECT	0.47MF	20%	50V
C10	1-123-316-00	ELECT	10MF	20%	16V
C11	1-101-004-00	CERAMIC	0.01MF		50V
C12	1-123-316-00	ELECT	10MF	20%	16V
C13	1-123-316-00	ELECT	10MF	20%	16V
C15	1-123-318-00	ELECT	33MF	20%	16V
C16	1-109-667-71	MICA	56PF	1%	500V
C17	1-102-864-00	CERAMIC	5PF	0.5PF	50V
C18	1-109-681-71	MICA	220PF	1%	500V
C19	1-123-319-00	ELECT	47MF	20%	16V
C20	1-123-319-00	ELECT	47MF	20%	16V
C21	1-123-319-00	ELECT	47MF	20%	16V
C22	1-102-864-00	CERAMIC	5PF	0.5PF	50V
C23	1-123-319-00	ELECT	47MF	20%	16V
C24	1-101-004-00	CERAMIC	0.01MF		50V
C25	1-101-004-00	CERAMIC	0.01MF		50V
C26	1-123-316-00	ELECT	10MF	20%	16V
C27	1-123-316-00	ELECT	10MF	20%	16V
C28	1-123-317-00	ELECT	22MF	20%	16V
C29	1-101-004-00	CERAMIC	0.01MF		50V
C30	1-101-004-00	CERAMIC	0.01MF		50V
C31	1-101-004-00	CERAMIC	0.01MF		50V
C32	1-123-351-00	ELECT	0.47MF	20%	50V
C33	1-101-004-00	CERAMIC	0.01MF		50V
C34	1-101-004-00	CERAMIC	0.01MF		50V
C35	1-101-004-00	CERAMIC	0.01MF		50V
C36	1-123-316-00	ELECT	10MF	20%	16V
C37	1-101-004-00	CERAMIC	0.01MF		50V
C38	1-123-316-00	ELECT	10MF	20%	16V
C39	1-123-316-00	ELECT	10MF	20%	16V
C41	1-123-318-00	ELECT	33MF	20%	16V
C42	1-109-667-71	MICA	56PF	1%	500V
C43	1-109-681-71	MICA	220PF	1%	500V
C44	1-102-864-00	CERAMIC	5PF	0.5PF	50V
C45	1-123-319-00	ELECT	47MF	20%	16V
C46	1-123-319-00	ELECT	47MF	20%	16V
C47	1-123-319-00	ELECT	47MF	20%	16V
C49	1-102-864-00	CERAMIC	5PF	0.5PF	50V
C50	1-123-319-00	ELECT	47MF	20%	16V
C51	1-101-004-00	CERAMIC	0.01MF		50V
C52	1-101-004-00	CERAMIC	0.01MF		50V
C53	1-123-316-00	ELECT	10MF	20%	16V
C54	1-123-316-00	ELECT	10MF	20%	16V
C55	1-123-319-00	ELECT	47MF	20%	16V
C56	1-102-518-00	CERAMIC	33PF	5%	50V
C57	1-101-884-00	CERAMIC	56PF		50V
C58	1-101-884-00	CERAMIC	56PF		50V
C59	1-102-951-00	CERAMIC	15PF	5%	50V
C60	1-102-965-00	CERAMIC	39PF		50V
C61	1-102-935-00	CERAMIC	2PF		50V
C63	1-101-004-00	CERAMIC	0.01MF		50V
C64	1-101-004-00	CERAMIC	0.01MF		50V
C65	1-101-004-00	CERAMIC	0.01MF		50V
C66	1-101-004-00	CERAMIC	0.01MF		50V
C68	1-101-004-00	CERAMIC	0.01MF		50V
C69	1-123-319-00	ELECT	47MF	20%	16V
C70	1-102-864-00	CERAMIC	5PF	0.5PF	50V
C71	1-123-316-00	ELECT	10MF	20%	16V
C72	1-123-316-00	ELECT	10MF	20%	16V
C73	1-123-316-00	ELECT	10MF	20%	16V
C74	1-123-316-00	ELECT	10MF	20%	16V
C75	1-123-320-00	ELECT	100MF	20%	16V

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RESISTORS
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- F : nonflammable

COILS
- MMH : mH, UH : μH

- P : BVM-1301P
  PM: BVM-1301PM

Ref.No	Part No	Description			Remark
C76	1-123-316-00	ELECT	10MF	20%	16V
C77	1-123-316-00	ELECT	10MF	20%	16V
C78	1-123-316-00	ELECT	10MF	20%	16V
C79	1-123-320-00	ELECT	100MF	20%	16V
C80	1-123-316-00	ELECT	10MF	20%	16V
C83	1-123-316-00	ELECT	10MF	20%	16V
C84	1-123-316-00	ELECT	10MF	20%	16V
C86	1-101-004-00	CERAMIC	0.01MF		50V
C87	1-101-004-00	CERAMIC	0.01MF		50V
C88	1-101-004-00	CERAMIC	0.01MF		50V
C89	1-101-004-00	CERAMIC	0.01MF		50V
C90	1-101-004-00	CERAMIC	0.01MF		50V
C91	1-101-004-00	CERAMIC	0.01MF		50V
C92	1-101-004-00	CERAMIC	0.01MF		50V
C93	1-101-004-00	CERAMIC	0.01MF		50V
C94	1-101-004-00	CERAMIC	0.01MF		50V
C95	1-101-004-00	CERAMIC	0.01MF		50V

DIODE

D1	8-719-143-07	DIODE RD4.3E-B
D2	8-719-143-07	DIODE RD4.3E-B
D3	8-719-143-07	DIODE RD4.3E-B
D4	8-719-143-07	DIODE RD4.3E-B
D5	8-719-143-07	DIODE RD4.3E-B

IC

IC1	8-795-145-58	IC UPC4558C
IC2	8-759-201-69	IC TL8608P
IC3	8-751-300-00	IC CX130
IC4	8-795-145-58	IC UPC4558C
IC5	8-759-201-69	IC TL8608P
IC6	8-751-300-00	IC CX130
IC7	8-795-145-58	IC UPC4558C
IC8	8-795-145-58	IC UPC4558C

COIL

L1	1-408-421-00	MICRO INDUCTOR 100UH
L2	1-408-421-00	MICRO INDUCTOR 100UH
L3	1-408-421-00	MICRO INDUCTOR 100UH
L4	1-408-421-00	MICRO INDUCTOR 100UH
L5	1-408-421-00	MICRO INDUCTOR 100UH

TRANSISTOR

Q1	8-729-603-50	TRANSISTOR 2SC403SP
Q2	8-729-603-50	TRANSISTOR 2SC403SP
Q3	=>8-729-106-07	TRANSISTOR 2SK514H
Q4	8-729-603-50	TRANSISTOR 2SC403SP
Q5	8-729-384-48	TRANSISTOR 2SA844
Q6	8-729-603-50	TRANSISTOR 2SC403SP
Q7	8-729-384-48	TRANSISTOR 2SA844
Q8	8-729-603-50	TRANSISTOR 2SC403SP
Q9	=>8-729-106-07	TRANSISTOR 2SK514H
Q11	8-729-603-50	TRANSISTOR 2SC403SP
Q12	8-729-603-50	TRANSISTOR 2SC403SP
Q13	=>8-729-106-07	TRANSISTOR 2SK514H
Q14	8-729-603-50	TRANSISTOR 2SC403SP
Q15	8-729-384-48	TRANSISTOR 2SA844
Q16	8-729-603-50	TRANSISTOR 2SC403SP

Ref.No	Part No	Description	Remark
Q17	8-729-384-48	TRANSISTOR 2SA844	
Q18	8-729-603-50	TRANSISTOR 2SC403SP	
Q19	=>8-729-106-07	TRANSISTOR 2SK514H	
Q20	8-729-603-50	TRANSISTOR 2SC403SP	
Q21	8-729-384-48	TRANSISTOR 2SA844	
Q22	8-729-603-50	TRANSISTOR 2SC403SP	
Q23	=>8-769-192-00	TRANSISTOR 2SK43-2	
Q24	8-729-603-50	TRANSISTOR 2SC403SP	
Q25	8-729-384-48	TRANSISTOR 2SA844	

RESISTOR

R1	1-247-859-00	CARBON	15K	5%	1/6W
R2	1-247-841-00	CARBON	2.7K	5%	1/6W
R3	1-247-871-00	CARBON	47K	5%	1/6W
R4	1-247-863-00	CARBON	22K	5%	1/6W
R5	1-247-831-00	CARBON	1K	5%	1/6W
R6	1-247-855-00	CARBON	10K	5%	1/6W
R7	1-247-855-00	CARBON	10K	5%	1/6W
R8	1-247-903-00	CARBON	1M	5%	1/6W
R9	1-215-447-00	METAL	12K	1%	1/6W
R10	1-215-445-00	MEATL	10K	1%	1/6W
R11	1-215-433-00	METAL	3.3K	1%	1/6W
R12	1-247-903-00	CARBON	1M	5%	1/6W
R13	1-247-863-00	CARBON	22K	5%	1/6W
R14	1-215-424-00	METAL	1.3K	1%	1/6W
R15	1-247-841-00	CARBON	2.7K	5%	1/6W
R16	1-215-422-00	METAL	1.1K	1%	1/6W
R17	1-215-426-00	METAL	1.6K	1%	1/6W
R18	1-247-841-00	CARBON	2.7K	5%	1/6W
R19	1-215-437-00	METAL	4.7K	1%	1/6W
R20	1-215-431-00	METAL	2.7K	1%	1/6W
R21	1-247-847-00	CARBON	4.7K	5%	1/6W
R22	1-215-421-00	METAL	1K	1%	1/6W
R23	1-247-807-00	CARBON	100	5%	1/6W
R24	1-247-807-00	CARBON	100	5%	1/6W
R25	1-215-437-00	METAL	4.7K	1%	1/6W
R26	1-215-451-00	METAL	18K	1%	1/6W
R27	1-215-421-00	METAL	1K	1%	1/6W
R28	1-215-429-00	METAL	2.2K	1%	1/6W
R29	1-247-850-00	CARBON	6.2K	5%	1/6W
R30	1-247-837-00	CARBON	1.8K	5%	1/6W
R31	1-202-473-00	COMPOSITION	5.6M	5%	1/4W
R32	1-247-855-00	CARBON	10K	5%	1/6W
R33	1-215-469-00	METAL	100K	1%	1/6W
R34	1-215-421-00	METAL	1K	1%	1/6W
R35	1-247-831-00	CARBON	1K	5%	1/6W
R36	1-247-845-00	CARBON	3.9K	5%	1/6W
R37	1-247-855-00	CARBON	10K	5%	1/6W
R38	1-215-441-00	METAL	6.8K	1%	1/6W
R39	1-247-855-00	CARBON	10K	5%	1/6W
R40	1-247-871-00	CARBON	47K	5%	1/6W
R41	1-247-863-00	CARBON	22K	5%	1/6W
R42	1-247-831-00	CARBON	1K	5%	1/6W
R43	1-247-855-00	CARBON	10K	5%	1/6W
R44	1-247-855-00	CARBON	10K	5%	1/6W
R45	1-247-903-00	CARBON	1M	5%	1/6W

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COILS
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BB B

Ref.No	Part No	Description			Remark
R46	1-215-447-00	METAL	12K	1%	1/6W
R47	1-215-445-00	METAL	10K	1%	1/6W
R48	1-215-433-00	METAL	3.3K	1%	1/6W
R49	1-247-903-00	CARBON	1M	5%	1/6W
R50	1-247-863-00	CARBON	22K	5%	1/6W
R51	1-247-841-00	CARBON	2.7K	5%	1/6W
R52	1-215-424-00	METAL	1.3K	1%	1/6W
R53	1-215-422-00	METAL	1.1K	1%	1/6W
R54	1-215-426-00	METAL	1.6K	1%	1/6W
R55	1-247-841-00	CARBON	2.7K	5%	1/6W
R56	1-215-433-00	METAL	3.3K	1%	1/6W
R57	1-215-437-00	METAL	4.7K	1%	1/6W
R58	1-247-847-00	CARBON	4.7K	5%	1/6W
R59	1-215-421-00	METAL	1K	1%	1/6W
R60	1-247-807-00	CARBON	100	5%	1/6W
R61	1-247-807-00	CARBON	100	5%	1/6W
R62	1-247-807-00	CARBON	100	5%	1/6W
R63	1-247-863-00	CARBON	22K	5%	1/6W
R64	1-215-423-00	METAL	1.2K	1%	1/6W
R65	1-215-433-00	METAL	3.3K	1%	1/6W
R66	1-247-850-00	CARBON	6.2K	5%	1/6W
R67	1-247-837-00	CARBON	1.8K	5%	1/6W
R68	1-202-473-00	COMPOSITION	5.6M	5%	1/4W
R69	1-215-469-00	METAL	100K	1%	1/6W
R70	1-247-855-00	CARBON	10K	5%	1/6W
R71	1-215-421-00	METAL	1K	1%	1/6W
R72	1-247-831-00	CARBON	1K	5%	1/6W
R73	1-247-845-00	CARBON	3.9K	5%	1/6W
R74	1-247-855-00	CARBON	10K	5%	1/6W
R75	1-215-445-00	METAL	10K	1%	1/6W
R76	1-247-855-00	CARBON	10K	5%	1/6W
R77	1-247-859-00	CARBON	15K	5%	1/6W
R78	1-247-841-00	CARBON	2.7K	5%	1/6W
R79	1-247-871-00	CARBON	47K	5%	1/6W
R80	1-247-871-00	CARBON	47K	5%	1/6W
R81	1-247-831-00	CARBON	1K	5%	1/6W
R82	1-247-831-00	CARBON	1K	5%	1/6W
R83	1-247-831-00	CARBON	1K	5%	1/6W
R84	1-247-831-00	CARBON	1K	5%	1/6W
R85	1-247-831-00	CARBON	1K	5%	1/6W
R86	1-247-855-00	CARBON	10K	5%	1/6W
R87	1-202-473-00	COMPOSITION	5.6M	5%	1/4W
R88	1-247-855-00	CARBON	10K	5%	1/6W
R89	1-247-855-00	CARBON	10K	5%	1/6W
R90	1-215-469-00	METAL	100K	1%	1/6W
R91	1-215-421-00	METAL	1K	1%	1/6W
R92	1-247-841-00	CARBON	2.7K	5%	1/6W
R93	1-215-414-00	METAL	510	1%	1/6W
R94	1-247-850-00	CARBON	6.2K	5%	1/6W
R95	1-215-425-00	METAL	1.5K	1%	1/6W
R96	1-215-432-00	METAL	3K	1%	1/6W
R97	1-247-847-00	CARBON	4.7K	5%	1/6W
R98	1-247-807-00	CARBON	100	5%	1/6W
R99	1-215-421-00	METAL	1K	1%	1/6W
R100	1-215-418-00	METAL	750	1%	1/6W

Ref.No	Part No	Description			Remark
R101	1-247-855-00	CARBON	10K	5%	1/6W
R102	1-247-807-00	CARBON	100	5%	1/6W
R103	1-247-807-00	CARBON	100	5%	1/6W
R104	1-247-839-00	CARBON	2.2K	5%	1/6W

VARIABLE RESISTOR

RV1	1-228-292-00	RES ADJ CERMET	2K
RV2	1-228-296-00	RES ADJ CERMET	50K
RV3	1-228-292-00	RES ADJ CERMET	2K
RV4	1-228-296-00	RES ADJ CERMET	50K
RV5	1-228-291-00	RES ADJ CERMET	1K
RV6	1-228-295-00	RES ADJ CERMET	20K
RV7	1-228-292-00	RES ADJ CERMET	2K
RV8	1-228-291-00	RES ADJ CERMET	1K
RV9	1-228-291-00	RES ADJ CERMET	1K
RV10	1-228-295-00	RES ADJ CERMET	20K
RV11	1-228-292-00	RES ADJ CERMET	2K
RV12	1-228-291-00	RES ADJ CERMET	1K
RV13	1-228-292-00	RES ADJ CERMET	2K
RV14	1-228-290-00	RES ADJ CERMET	500
RV15	1-228-295-00	RES ADJ CERMET	20K

CRYSTAL

X1	1-567-409-00	OSCILLATOR, CRYSTAL

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♣:A-1135-118-A	B BOARD, COMPLETE	P E-257
♣:A-1135-129-A	B BOARD, COMPLETE	PM E-257
♣:1-526-580-00	SOCKET, IC (14P)	
♣:4-335-908-00	WASHER (S), FITTING, CONTROL	

CAPACITOR

C1	1-101-006-00	CERAMIC	0.047MF	50V	
C2	1-102-519-00	CERAMIC	36PF 5%	50V	P
C2	1-102-883-00	CERAMIC	33PF 5%	50V	PM
C3	1-101-006-00	CERAMIC	0.047MF	50V	
C4	1-101-001-00	CERAMIC	0.001MF	50V	
C5	1-121-257-00	ELECT	4.7MF	16V	
C6	1-123-351-00	ELECT	0.47MF 20%	50V	
C7	1-102-855-00	CERAMIC	15PF 5%	50V	
C8	1-102-529-00	CERAMIC	100PF 5%	50V	
C9	1-102-865-00	CERAMIC	8PF 0.5PF	50V	
C10	1-102-973-00	CERAMIC	100PF 5%	50V	
C11	1-101-006-00	CERAMIC	0.047MF	50V	
C12	1-101-001-00	CERAMIC	0.001MF	50V	
C13	1-101-004-00	CERAMIC	0.01MF	50V	
C14	1-101-004-00	CERAMIC	0.01MF	50V	
C15	1-101-004-00	CERAMIC	0.01MF	50V	
C16	1-101-004-00	CERAMIC	0.01MF	50V	
C17	1-101-006-00	CERAMIC	0.047MF	50V	
C18	1-123-320-00	ELECT	100MF 20%	16V	
C19	1-102-662-00	CERAMIC	7PF 0.5PF	50V	P

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CAPACITORS
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RESISTORS
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- F : nonflammable

COILS
- MMH : mH, UH : μH

- P : BVM-1301P
  PM: BVM-1301PM

Ref.No	Part No	Description				Remark
C19	1-102-858-00	CERAMIC	10PF	0.5PF	50V	PM
C20	1-102-662-00	CERAMIC	7PF	0.5PF	50V	P
C20	1-102-858-00	CERAMIC	10PF	0.5PF	50V	PM
C21	1-102-951-00	CERAMIC	15PF	5%	50V	
C22	1-123-319-00	ELECT	47MF	20%	16V	
C23	1-102-963-00	CERAMIC	33PF	5%	50V	P
C23	1-102-520-00	CERAMIC	39PF	5%	50V	PM
C24	1-123-320-00	ELECT	100MF	20%	16V	
C25	1-101-006-00	CERAMIC	0.047MF		50V	
C26	1-123-316-00	ELECT	10MF	20%	16V	
C27	1-123-316-00	ELECT	10MF	20%	16V	
C28	1-101-006-00	CERAMIC	0.047MF		50V	
C29	1-101-006-00	CERAMIC	0.047MF		50V	
C30	1-101-006-00	CERAMIC	0.047MF		50V	
C31	1-102-864-00	CERAMIC	5PF	0.5PF	50V	
C32	1-123-319-00	ELECT	47MF	20%	16V	
C33	1-123-332-00	ELECT	47MF		16V	
C34	1-101-004-00	CERAMIC	0.01MF		50V	
C35	1-161-059-00	CERAMIC	0.047MF	10%	50V	
C36	1-101-006-00	CERAMIC	0.047MF		50V	
C37	1-102-531-00	CERAMIC	150PF	5%	50V	
C38	1-102-531-00	CERAMIC	150PF	5%	50V	
C39	1-102-531-00	CERAMIC	150PF	5%	50V	
C40	1-102-531-00	CERAMIC	150PF	5%	50V	
C41	1-102-978-00	CERAMIC	220PF	5%	50V	
C42	1-101-004-00	CERAMIC	0.01MF		50V	
C43	1-102-657-61	CERAMIC	6PF	5%	50V	
C44	1-102-657-61	CERAMIC	6PF	5%	50V	
C45	1-102-531-00	CERAMIC	150PF	5%	50V	
C46	1-102-531-00	CERAMIC	150PF	5%	50V	
C47	1-102-531-00	CERAMIC	150PF	5%	50V	
C48A	1-123-320-00	ELECT	100MF	20%	16V	
C48B	1-102-504-00	CERAMIC	4PF	0.25PF	50V	
C49	1-101-006-00	CERAMIC	0.047MF		50V	
C50	1-123-320-00	ELECT	100MF	20%	16V	
C51	1-101-006-00	CERAMIC	0.047MF		50V	
C52	1-123-319-00	ELECT	47MF	20%	16V	
C53	1-101-006-00	CERAMIC	0.047MF		50V	
C54	1-123-319-00	ELECT	47MF	20%	16V	
C55	1-101-006-00	CERAMIC	0.047MF		50V	
C56	1-123-320-00	ELECT	100MF	20%	16V	
C57	1-101-006-00	CERAMIC	0.047MF		50V	
C58	1-123-320-00	ELECT	100MF	20%	16V	
C59	1-101-006-00	CERAMIC	0.047MF		50V	
C60	1-123-319-00	ELECT	47MF	20%	16V	
C61	1-123-319-00	ELECT	47MF	20%	16V	
C62	1-101-006-00	CERAMIC	0.047MF		50V	
C63	1-123-320-00	ELECT	100MF	20%	16V	
C64	1-101-006-00	CERAMIC	0.047MF		50V	
C65	1-123-320-00	ELECT	100MF	20%	16V	
C66	1-101-006-00	CERAMIC	0.047MF		50V	
C67	1-123-316-00	ELECT	10MF	20%	16V	
C68	1-123-316-00	ELECT	10MF	20%	16V	
C69	1-123-319-00	ELECT	47MF	20%	16V	
C70	1-101-006-00	CERAMIC	0.047MF		50V	
C71	1-123-319-00	ELECT	47MF	20%	16V	
C72	1-123-319-00	ELECT	47MF	20%	16V	
C73	1-101-006-00	CERAMIC	0.047MF		50V	
C74	1-123-319-00	ELECT	47MF	20%	16V	
C75	1-101-006-00	CERAMIC	0.047MF		50V	
C76	1-101-006-00	CERAMIC	0.047MF		50V	
C77	1-123-316-00	ELECT	10MF	20%	16V	

TRIMMER

CV1	1-141-138-XX	CAP, TRIMMER, 5PF-8PF

DIODE

D1	8-719-815-55	DIODE 1S1555
D2	8-719-815-55	DIODE 1S1555
D3	8-719-815-55	DIODE 1S1555
D4	8-719-182-07	DIODE RD8.2E-B
D5	=>8-719-143-07	DIODE RD4.3E-B
D6	8-719-815-55	DIODE 1S1555
D7	8-719-815-55	DIODE 1S1555
D8	8-719-815-55	DIODE 1S1555

DELAY LINE

DL1	1-415-184-11	DELAY LINE
DL2	1-415-184-21	DELAY LINE

IC

IC1	8-757-182-20	IC CX-718D
IC2	8-751-300-00	IC CX-130
IC3	8-759-145-58	IC UPC4558C
IC4	8-751-300-00	IC CX-130
IC5	8-759-271-58	IC TA7158P
IC6	8-759-145-58	IC UPC4558C
IC7	8-759-900-00	IC SN74LS00N
IC8	8-759-900-00	IC SN74LS00N
IC9	8-759-901-23	IC SN74LS123N
IC10	8-759-901-57	IC SN74LS157N
IC11	8-759-115-55	IC UPC1555C
IC12	8-759-901-23	IC SN74LS123N
IC13	8-759-900-26	IC SN74LS26N

COIL

L1	1-407-573-00	COIL, VARIABLE 47MH	P
L1	1-407-575-11	COIL, VARIABLE 100UH	PM
L2	1-407-191-XX	MICRO INDUCTOR 470UH	
L3	1-407-572-00	COIL, VARIABLE 33MH	
L4	1-409-193-00	COIL 3.58MHZ TRAP 100UP	
L5	1-407-572-00	COIL, VARIABLE 33MH	P
L5	1-407-571-00	MICRO INDUCTOR 22UH	PM
L6	1-407-566-00	COIL, VARIABLE 3.3MH	
L7	1-407-158-XX	MICRO INDUCTOR 12UH	
L8	1-407-688-00	MICRO INDUCTOR 3.9UH	

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RESISTORS
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- F : nonflammable

COILS
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- P : BVM-1301P
  PM: BVM-1301PM

B

Ref.No	Part No	Description				Remark
		TRANSISTOR				
Q1	8-724-375-01	TRANSISTOR 2SC403C				
Q2	8-724-375-01	TRANSISTOR 2SC403C				
Q3	8-729-384-48	TRANSISTOR 2SA844				
Q4	8-724-375-01	TRANSISTOR 2SC403C				
Q5	8-724-375-01	TRANSISTOR 2SC403C				
Q6	8-724-375-01	TRANSISTOR 2SC403C				
Q7	8-729-384-48	TRANSISTOR 2SA844				
Q8	8-729-384-48	TRANSISTOR 2SA844				
Q9	8-724-375-01	TRANSISTOR 2SC403C				
Q10	8-729-384-48	TRANSISTOR 2SA844				
Q11	8-724-375-01	TRANSISTOR 2SC403C				
Q12	8-724-375-01	TRANSISTOR 2SC403C				
Q13	8-724-375-01	TRANSISTOR 2SC403C				
Q14	8-724-375-01	TRANSISTOR 2SC403C				
Q15	=>8-723-302-00	TRANSISTOR 2SK43-02				
Q16	8-729-384-48	TRANSISTOR 2SA844				
Q17	8-724-375-01	TRANSISTOR 2SC403C				
Q18	=>8-723-302-00	TRANSISTOR 2SK43-02				
Q19	8-724-375-01	TRANSISTOR 2SC403C				
Q20	8-729-384-48	TRANSISTOR 2SA844				
Q21	8-724-375-01	TRANSISTOR 2SC403C				
Q22	8-724-375-01	TRANSISTOR 2SC403C				
Q23	8-724-375-01	TRANSISTOR 2SC403C				
Q24	8-724-375-01	TRANSISTOR 2SC403C				
Q25	8-724-375-01	TRANSISTOR 2SC403C				
Q26	8-729-384-48	TRANSISTOR 2SA844				
Q27	8-729-384-48	TRANSISTOR 2SA844				
Q28	8-724-375-01	TRANSISTOR 2SC403C				
Q29	8-729-384-48	TRANSISTOR 2SA844				
Q30	8-724-375-01	TRANSISTOR 2SC403C				
Q31	=>8-723-301-01	TRANSISTOR 2SK43-11				
Q32	8-729-384-48	TRANSISTOR 2SA844				
Q33	8-724-375-01	TRANSISTOR 2SC403C				
Q34	8-765-212-20	TRANSISTOR 2SA925				
		RESISTOR				
R1	1-246-771-00	CARBON	100	5%	1/8W	
R2	1-246-795-00	CARBON	10K	5%	1/8W	
R3	1-246-796-00	CARBON	12K	5%	1/8W	
R4	1-246-794-00	CARBON	8.2K	5%	1/8W	
R5	1-246-783-00	CARBON	1K	5%	1/8W	
R6	1-214-134-00	METAL	1.2K	1%	1/4W	P
R6	1-214-139-00	METAL	2K	1%	1/4W	PM
R7	1-246-791-00	CARBON	4.7K	5%	1/8W	
R8	1-246-771-00	CARBON	100	5%	1/8W	
R9	1-246-795-00	CARBON	10K	5%	1/8W	
R10	1-246-795-00	CARBON	10K	5%	1/8W	
R11	1-214-128-00	METAL	680	1%	1/4W	
R12	1-214-126-00	METAL	560	1%	1/4W	
R13	1-246-789-00	CARBON	3.3K	5%	1/8W	
R14	1-246-771-00	CARBON	100	5%	1/8W	

Ref.No	Part No	Description				Remark
R15	1-202-473-00	COMPOSITION	5.6M	5%	1/4W	
R16	1-246-786-00	CARBON	1.8K	5%	1/8W	
R17	1-214-132-00	METAL	1K	1%	1/4W	
R18	1-246-791-00	CARBON	4.7K	5%	1/8W	
R19	1-246-794-00	CARBON	8.2K	5%	1/8W	
R20	1-246-788-00	CARBON	2.7K	5%	1/8W	
R21	1-214-142-00	METAL	2.7K	1%	1/4W	
R22	1-214-161-00	METAL	16K	1%	1/4W	
R23	1-214-148-00	METAL	4.7K	1%	1/4W	
R24	1-246-791-00	CARBON	4.7K	5%	1/8W	
R25	1-246-771-00	CARBON	100	5%	1/8W	
R26	1-246-795-00	CARBON	10K	5%	1/8W	
R27	1-246-795-00	CARBON	10K	5%	1/8W	
R28	1-214-128-00	METAL	680	1%	1/4W	
R29	1-214-126-00	METAL	560	1%	1/4W	
R30	1-246-789-00	CARBON	3.3K	5%	1/8W	
R31	1-246-771-00	CARBON	100	5%	1/8W	
R32	1-202-473-00	COMPOSITION	5.6M	5%	1/4W	
R33	1-246-789-00	CARBON	3.3K	5%	1/8W	
R34	1-246-771-00	CARBON	100	5%	1/8W	
R35	1-246-795-00	CARBON	10K	5%	1/8W	
R36	1-202-473-00	COMPOSITION	5.6M	5%	1/4W	
R37	1-246-799-00	CARBON	22K	5%	1/8W	
R38	1-246-799-00	CARBON	22K	5%	1/8W	
R39	1-246-795-00	CARBON	10K	5%	1/8W	
R40	1-202-473-00	COMPOSITION	5.6M	5%	1/4W	
R41	1-246-795-00	CARBON	10K	5%	1/8W	
R42	1-214-151-00	METAL	6.2K	1%	1/4W	
R43	1-214-180-00	METAL	100K	1%	1/4W	
R44	1-214-167-00	METAL	30K	1%	1/4W	
R45	1-246-796-00	CARBON	12K	5%	1/8W	
R46	1-246-771-00	CARBON	100	5%	1/8W	
R47	1-246-795-00	CARBON	10K	5%	1/8W	
R48	1-214-095-00	METAL	30	1%	1/4W	
R49	1-214-142-00	METAL	2.7K	1%	1/4W	
R50	1-246-771-00	CARBON	100	5%	1/8W	
R51	1-246-785-00	CARBON	1.5K	5%	1/8W	
R52	1-246-773-00	CARBON	150	5%	1/8W	
R53	1-246-788-00	CARBON	2.7K	5%	1/8W	
R54	1-214-132-00	METAL	1K	1%	1/4W	
R55	1-214-132-00	METAL	1K	1%	1/4W	
R56	1-214-138-00	METAL	1.8K	1%	1/4W	P
R56	1-214-139-00	METAL	2K	1%	1/4W	PM
R57	1-246-786-00	CARBON	1.8K	5%	1/8W	
R58	1-246-791-00	CARBON	4.7K	5%	1/8W	
R59	1-246-771-00	CARBON	100	5%	1/8W	
R60	1-246-795-00	CARBON	10K	5%	1/8W	
R61	1-246-787-00	CARBON	2.2K	5%	1/8W	
R62	1-246-847-00	CARBON	2K	5%	1/8W	
R63	1-246-847-00	CARBON	2K	5%	1/8W	
R64	1-246-786-00	CARBON	1.8K	5%	1/8W	
R65	1-246-775-00	CARBON	220	5%	1/8W	

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- All resistors are in ohms
- F : nonflammable

COILS
- MMH : mH, UH : μH

- P : BVM-1301P
  PM: BVM-1301PM

Ref.No	Part No	Description				Remark
R66	1-246-791-00	CARBON	4.7K	5%	1/8W	
R67	1-246-791-00	CARBON	4.7K	5%	1/8W	
R68	1-246-788-00	CARBON	2.7K	5%	1/8W	
R69	1-246-783-00	CARBON	1K	5%	1/8W	
R70	1-246-835-00	CARBON	200	5%	1/8W	
R71	1-214-108-00	METAL	100	1%	1/4W	
R72	1-214-108-00	METAL	100	1%	1/4W	
R73	1-214-150-00	METAL	5.6K	1%	1/4W	
R74	1-214-123-00	METAL	430	1%	1/4W	
R75	1-214-180-00	METAL	100K	1%	1/4W	
R76	1-214-180-00	METAL	100K	1%	1/4W	
R77	1-214-124-00	METAL	470	1%	1/4W	
R78	1-246-842-00	CARBON	750	5%	1/8W	
R79	1-246-842-00	CARBON	750	5%	1/8W	
R80	1-246-785-00	CARBON	1.5K	5%	1/8W	
R81	1-214-128-00	METAL	680	1%	1/4W	
R82	1-214-120-00	METAL	330	1%	1/4W	
R83	1-214-091-00	METAL	20	1%	1/4W	
R84	1-214-120-00	METAL	330	1%	1/4W	
R85	1-214-091-00	METAL	20	1%	1/4W	
R86	1-246-853-00	CARBON	6.2K	5%	1/8W	
R87	1-214-136-00	METAL	1.5K	1%	1/4W	
R88	1-214-126-00	METAL	560	1%	1/4W	
R89	1-246-788-00	CARBON	2.7K	5%	1/8W	
R90	1-202-473-00	COMPOSITION	5.6M	5%	1/4W	
R91	1-246-795-00	CARBON	10K	5%	1/8W	
R92	1-246-795-00	CARBON	10K	5%	1/8W	
R93	1-214-132-00	METAL	1K	1%	1/4W	
R94	1-246-784-00	CARBON	1.2K	5%	1/8W	
R95	1-246-841-00	CARBON	620	5%	1/8W	
R96	1-246-784-00	CARBON	1.2K	5%	1/8W	
R97	1-214-138-11	METAL	1.8K	1%	1/4W	
R98	1-246-795-35	CARBON	10K	5%	1/8W	
R99	1-246-795-35	CARBON	10K	5%	1/8W	
R100	1-246-791-00	CARBON	4.7K	5%	1/8W	
R101	1-246-800-00	CARBON	27K	5%	1/8W	
R102	1-246-797-00	CARBON	15K	5%	1/8W	
R103	1-246-805-00	CARBON	68K	5%	1/8W	
R104	1-246-788-00	CARBON	2.7K	5%	1/8W	
R105	1-214-174-00	METAL	56K	1%	1/4W	
R106	1-214-180-00	METAL	100K	1%	1/4W	
R107	1-214-155-00	METAL	9.1K	1%	1/4W	
R108	1-246-797-00	CARBON	15K	5%	1/8W	
R109	1-246-799-00	CARBON	22K	5%	1/8W	
R110	1-214-180-00	METAL	100K	1%	1/4W	
R111	1-214-172-00	METAL	47K	1%	1/4W	
R112	1-214-163-00	METAL	20K	1%	1/4W	
R113	1-214-142-00	METAL	2.7K	1%	1/4W	
R114	1-246-788-00	CARBON	2.7K	5%	1/8W	
R115	1-246-857-00	CARBON	13K	5%	1/8W	
R116	1-246-791-00	CARBON	4.7K	5%	1/8W	
R117	1-246-790-00	CARBON	3.9K	5%	1/8W	

Ref.No	Part No	Description	Remark
		VARIABLE RESISTOR	
RV1	1-224-936-21	RES, ADJ, METAL FILM 500	
RV2	1-224-941-21	RES, ADJ, METAL FILM 20K	
RV3	1-224-937-21	RES, ADJ, METAL FILM 1K	
RV5	1-224-942-00	RES, ADJ, METAL FILM 20K	
RV6	1-224-940-21	RES, ADJ, METAL FILM 10K	
RV7	1-224-941-21	RES, ADJ, METAL FILM 20K	
RV8	1-224-940-21	RES, ADJ, METAL FILM 10K	
		SWITCH	
S1	1-552-898-00	SWITCH, TOGGLE	

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♦:A-1195-001-A	P BOARD, COMPLETE		E-204
♦:4-335-909-00	WASHER (L), BRACKET, CONTROL		

CAPACITOR

C1	1-108-377-00	MYLAR	0.01MF	10%	100V
C2	1-129-794-00	FILM	0.0033MF	2%	100V
C3	1-102-228-00	CERAMIC	470PF	10%	500V
C4	1-108-377-00	MYLAR	0.01MF	10%	100V
C5	1-102-244-00	CERAMIC	220PF	10%	500V
C6	1-108-423-00	MYLAR	0.015MF	10%	200V
C7	1-123-093-00	ELECT	22MF	20%	160V
C8	1-130-066-00	FILM	14000PF	3%	1.5KV
C9	1-130-067-00	FILM	45000PF	3%	1.5KV
C10	1-130-068-00	FILM	67000PF	3%	1KV
C11	1-108-373-00	MYLAR	0.0047MF	10%	100V
C12	1-123-319-00	ELECT	47MF	20%	16V
C13	1-102-244-00	CERAMIC	220PF	10%	500V
C14	1-102-824-00	CERAMIC	430PF	5%	50V
C15	1-123-319-00	ELECT	47MF	20%	16V
C16	1-108-389-00	MYLAR	0.1MF	10%	100V
C17	1-123-319-00	ELECT	47MF	20%	16V
C18	1-123-319-00	ELECT	47MF	20%	16V
C19	1-123-319-00	ELECT	47MF	20%	16V
C20	1-123-352-00	ELECT	1MF	20%	50V
C21	1-108-433-00	MYLAR	0.1MF	10%	200V
C22	1-102-824-00	CERAMIC	430PF	5%	50V
C23	1-123-316-00	ELECT	10MF	20%	16V
C24	1-123-316-00	ELECT	10MF	20%	16V

DIODE

D1	8-719-815-55	DIODE 1S1555
D2	8-719-815-55	DIODE 1S1555
D3	=>8-719-200-02	DIODE 10E2
D4	8-719-305-15	DIODE GH-3F
D5	8-719-815-55	DIODE 1S1555
D6	8-719-815-55	DIODE 1S1555
D7	8-719-815-55	DIODE 1S1555
D8	8-719-815-55	DIODE 1S1555
D9	8-719-815-55	DIODE 1S1555
D10	8-719-815-55	DIODE 1S1555

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

- Items marked " ♦ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

CAPACITORS
- MF : μF, PF : μμF

RESISTORS
- All resistors are in ohms
- F : nonflammable

COILS
- MMH : mH, UH : μH

- =>: Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.

- P : BVM-1301P
  PM: BVM-1301PM

P F

Ref.No	Part No	Description	Remark
D11	=>8-719-931-06	DIODE EQB01-06	
D12	=>8-719-200-02	DIODE 10E2	
D13	8-759-157-40	IC UPC574J	
D14	⚠8-719-992-12	DIODE EQA01-21RZ	
		IC	
IC1	8-759-145-58	IC UPC4558C	
IC2	8-759-145-58	IC UPC4558C	
IC3	8-759-145-58	IC UPC4558C	
		COIL	
L1	1-407-720-00	CHOKE COIL	
L2	1-413-026-00	COIL, SERIES REGULATION (SRC)	
L3	1-407-365-00	COIL, CHOKE	
L4	1-407-364-00	COIL, SPOOK CHOKE	
		CONNECTOR	
P1	♦:1-508-797-00	PIN, CONNECTOR 4P	
P2	♦:1-508-765-00	3P PLUG (M)	
P3	♦:1-508-766-00	4P PLUG (M)	
P4	♦:1-508-796-11	PIN, CONNECTOR 2P	
P5	♦:1-508-796-11	PIN, CONNECTOR 2P	
P6	♦:1-508-845-00	PIN, CONNECTOR 6P	
P7	♦:1-508-768-00	6P PLUG	
		TRANSISTOR	
Q1	8-729-663-47	TRANSISTOR 2SC1364	
Q2	8-729-663-47	TRANSISTOR 2SC1364	
Q3	8-765-012-20	TRANSISTOR 2SC1811	
Q4	8-729-663-47	TRANSISTOR 2SC1364	
Q5	8-719-000-38	THYRISTOR CR3AM	
		RESISTOR	
R1	1-246-515-00	CARBON 56K 5% 1/4W	
R2	1-246-475-00	CARBON 1.2K 5% 1/4W	
R3	1-246-475-00	CARBON 1.2K 5% 1/4W	
R4	1-246-481-00	CARBON 2.2K 5% 1/4W	
R5	1-246-473-00	CARBON 1K 5% 1/4W	
R6	1-246-489-00	CARBON 4.7K 5% 1/4W	
R7	1-206-680-00	METAL 4.7K 5% 2W	F
R8	1-212-364-00	METAL 2.2 5% 1W	F
R9	1-213-129-00	METAL 68 5% 1W	F
R10	1-246-497-00	CARBON 10K 5% 1/4W	
R11	1-246-499-00	CARBON 12K 5% 1/4W	
R12	1-246-487-00	CARBON 3.9K 5% 1/4W	
R13	1-246-481-00	CARBON 2.2K 5% 1/4W	
R14	1-246-537-00	CARBON 470K 5% 1/4W	
R15	1-246-497-00	CARBON 10K 5% 1/4W	
R16	1-246-497-00	CARBON 10K 5% 1/4W	
R17	1-246-481-00	CARBON 2.2K 5% 1/4W	
R18	1-214-180-00	METAL 100K 1% 1/4W	
R19	1-213-155-00	METAL 10K 5% 1W	F
R20	1-246-498-00	CARBON 11K 5% 1/4W	

Ref.No	Part No	Description	Remark
R21	1-246-473-00	CARBON 1K 5% 1/4W	
R22	1-246-487-00	CARBON 3.9K 5% 1/4W	
R23	1-214-168-00	METAL 33K 1% 1/4W	
R24	1-214-160-00	METAL 15K 1% 1/4W	
R25	1-246-497-00	CARBON 10K 5% 1/4W	
R26	1-202-645-00	COMPOSITION 1M 5% 1/2W	
R27	1-246-487-00	CARBON 3.9K 5% 1/4W	
R28	1-246-495-00	CARBON 8.2K 5% 1/4W	
R29	1-246-487-00	CARBON 3.9K 5% 1/4W	
R30	1-246-497-00	CARBON 10K 5% 1/4W	
R31	1-246-487-00	CARBON 3.9K 5% 1/4W	
R32	1-246-495-00	CARBON 8.2K 5% 1/4W	
R33	1-246-487-00	CARBON 3.9K 5% 1/4W	
R34	1-246-497-00	CARBON 10K 5% 1/4W	
R35	1-202-645-00	COMPOSITION 1M 5% 1/2W	
R36	1-246-497-00	CARBON 10K 5% 1/4W	
R37	1-246-508-00	CARBON 30K 5% 1/4W	
R38	1-246-491-00	CARBON 5.6K 5% 1/4W	
R39	1-246-491-00	CARBON 5.6K 5% 1/4W	
R40	⚠	METAL 1/4W	■
R41	⚠	METAL 1/4W	■
R42	1-246-469-00	CARBON 680 5% 1/4W	
		VARIABLE RESISTOR	
RV1	1-224-921-11	RES, ADJ, METAL FILM 20K	
		TRANSFOMER	
T1	1-437-071-00	TRANSFOMER, HORIZONTAL DRIVE	
T2	1-421-366-00	TRANSFORMER, FERRITE (L.O.T)	

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♦:1-600-352-00 F BOARD E-304

C1	⚠1-130-060-00	FILM	0.1MF	20%	125V
C2	⚠1-108-421-00	MYLAR	0.01MF	10%	200V

CONNECTOR

F1	♦:1-506-348-XX	3P PLUG (L)
F2	♦:1-506-348-XX	3P PLUG (L)
F3	♦:1-506-348-XX	3P PLUG (L)
F4	♦:1-506-371-00	2P PLUG
F5	♦:1-508-765-00	3P PLUG (M)
F6	♦:1-508-765-00	3P PLUG (M)
F7	♦:1-508-786-00	2P PLUG (M)
F8	♦:1-508-743-00	PIN, CONNECTOR 5P
F9	♦:1-508-845-00	PIN, CONNECTOR 6P
F10	♦:1-508-796-11	PIN, CONNECTOR 2P

COIL

L1	⚠1-441-855-00	TRANSFORMER, HEATER INSULATION

THERMISTOR

THP1	⚠1-800-686-00	THERISTOR

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

- =>: Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.
- Items marked " ♦ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

CAPACITORS
- MF : μF, PF : μμF

RESISTORS
- All resistors are in ohms
- F : nonflammable

COILS
- MMH : mH, UH : μH

- The components identified by ■ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

Ref.No	Part No	Description			Remark
	♦:A-1275-034-A	Q BOARD, COMPLETE			E-306
	♦:4-335-905-00	PLATE (S), SHIELD			
	♦:4-335-908-00	WASHER (S), FITTING, CONTROL			
		CAPACITOR			
C1	1-108-381-00	MYLAR	0.022MF	10%	100V
C2	1-123-319-00	ELECT	47MF		16V
C3	1-101-004-00	CERAMIC	0.01MF		50V
C4	1-102-508-00	CERAMIC	10PF	0.5PF	50V
C5	1-123-319-00	ELECT	47MF	20%	16V
C6	1-101-006-00	CERAMIC	0.047MF		50V
C7	1-102-525-00	CERAMIC	68PF	5%	50V
C8	1-123-316-00	ELECT	10MF	20%	16V
C9	1-123-319-00	ELECT	47MF	20%	16V
C10	1-108-381-00	MYLAR	0.022MF	10%	100V
C11	1-123-319-00	ELECT	47MF		16V
C12	1-101-004-00	CERAMIC	0.01MF		50V
C13	1-102-508-00	CERAMIC	10PF	0.5PF	50V
C14	1-123-319-00	ELECT	47MF	20%	16V
C15	1-101-006-00	CERAMIC	0.047MF		50V
C16	1-102-525-00	CERAMIC	68PF	5%	50V
C17	1-123-316-00	ELECT	10MF	20%	16V
C18	1-123-319-00	ELECT	47MF	20%	16V
C19	1-108-381-00	MYLAR	0.022MF	10%	100V
C20	1-123-319-00	ELECT	47MF		16V
C21	1-101-004-00	CERAMIC	0.01MF		50V
C22	1-102-513-00	CERAMIC	18PF	5%	50V
C23	1-123-319-00	ELECT	47MF	20%	16V
C24	1-101-006-00	CERAMIC	0.047MF		50V
C25	1-102-525-00	CERAMIC	68PF	5%	50V
C26	1-123-316-00	ELECT	10MF	20%	16V
C27	1-123-319-00	ELECT	47MF	20%	16V
C28	1-108-381-00	MYLAR	0.022MF	10%	100V
C29	1-123-319-00	ELECT	47MF		16V
C30	1-101-004-00	CERAMIC	0.01MF		50V
C31	1-102-508-00	CERAMIC	10PF	0.5PF	50V
C32	1-123-319-00	ELECT	47MF	20%	16V
C33	1-101-006-00	CERAMIC	0.047MF		50V
C34	1-102-525-00	CERAMIC	68PF	5%	50V
C35	1-101-006-00	CERAMIC	0.047MF		50V
C36	1-123-319-00	ELECT	47MF	20%	16V
C37	1-108-377-00	MYLAR	0.01MF	10%	100V
C38	1-108-389-00	MYLAR	0.1MF	10%	100V
C39	1-108-381-00	MYLAR	0.022MF	10%	100V
C40	1-123-319-00	ELECT	47MF		16V
C41	1-101-004-00	CERAMIC	0.01MF		50V
C42	1-102-508-00	CERAMIC	10PF	0.5PF	50V
C43	1-123-319-00	ELECT	47MF	20%	16V
C44	1-101-006-00	CERAMIC	0.047MF		50V
C45	1-102-525-00	CERAMIC	68PF	5%	50V
C46	1-101-006-00	CERAMIC	0.047MF		50V
C47	1-123-319-00	ELECT	47MF	20%	16V

Ref.No	Part No	Description			Remark
C48	1-108-377-00	MYLAR	0.01MF	10%	100V
C49	1-108-389-00	MYLAR	0.1MF	10%	100V
C50	1-108-381-00	MYLAR	0.022MF	10%	100V
C51	1-123-319-00	ELECT	47MF		16V
C52	1-101-004-00	CERAMIC	0.01MF		50V
C53	1-102-508-00	CERAMIC	10PF	0.5PF	50V
C54	1-123-319-00	ELECT	47MF	20%	16V
C55	1-101-006-00	CERAMIC	0.047MF		50V
C56	1-102-525-00	CERAMIC	68PF	5%	50V
C57	1-101-006-00	CERAMIC	0.047MF		50V
C58	1-123-319-00	ELECT	47MF	20%	16V
C59	1-108-377-00	MYLAR	0.01MF	10%	100V
C60	1-108-389-00	MYLAR	0.1MF	10%	100V
C61	1-101-004-00	CERAMIC	0.01MF		50V
C62	1-123-320-00	ELECT	100MF	20%	16V
C63	1-101-006-00	CERAMIC	0.047MF		50V
C64	1-101-004-00	CERAMIC	0.01MF		50V
C65	1-123-320-00	ELECT	100MF	20%	16V
C66	1-101-004-00	CERAMIC	0.01MF		50V
C67	1-123-320-00	ELECT	100MF	20%	16V
C68	1-101-006-00	CERAMIC	0.047MF		50V
C69	1-123-320-00	ELECT	100MF	20%	16V
C70	1-101-004-00	CERAMIC	0.01MF		50V
C71	1-123-320-00	ELECT	100MF	20%	16V
C72	1-101-004-00	CERAMIC	0.01MF		50V
C73	1-123-320-00	ELECT	100MF	20%	16V
C74	1-101-004-00	CERAMIC	0.01MF		50V
C75	1-101-006-00	CERAMIC	0.047MF		50V
C76	1-101-004-00	CERAMIC	0.01MF		50V
C77	1-123-320-00	ELECT	100MF	20%	16V
C78	1-101-004-00	CERAMIC	0.01MF		50V
C79	1-123-320-00	ELECT	100MF	20%	16V
C80	1-101-004-00	CERAMIC	0.01MF		50V
C81	1-123-320-00	ELECT	100MF	20%	16V
C82	1-101-006-00	CERAMIC	0.047MF		50V
C83	1-123-319-00	ELECT	47MF	20%	16V
C84	1-102-888-00	CERAMIC	150PF	5%	50V
C85	1-102-888-00	CERAMIC	150PF	5%	50V
C86	1-101-006-00	CERAMIC	0.047MF		50V
C87	1-123-319-00	ELECT	47MF	20%	16V
C88	1-123-319-00	ELECT	47MF	20%	16V
C89	1-123-319-00	ELECT	47MF	20%	16V
C90	1-123-319-00	ELECT	47MF	20%	16V
C91	1-123-320-00	ELECT	100MF	20%	16V
C92	1-101-004-00	CERAMIC	0.01MF		50V
C95	1-102-531-00	CERAMIC	150PF	5%	50V
C96	1-102-973-00	CERAMIC	100PF	5%	50V
C97	1-102-973-00	CERAMIC	100PF	5%	50V
		TRIMMER			
CV1	1-141-147-XX	CAP, TRIMMER, 15P			
CV2	1-141-138-XX	CAP, TRIMMER, 5PF-8PF			
CV3	1-141-147-XX	CAP, TRIMMER, 15P			

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- MF : μF, PF : μμF

RESISTORS
- All resistors are in ohms
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COILS
- MMH : mH, UH : μH

- ⇒: Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.

Q

Ref.No	Part No	Description	Remark
CV4	1-141-138-XX	CAP, TRIMMER, 5PF-8PF	
CV5	1-141-147-XX	CAP, TRIMMER, 15P	
CV6	1-141-147-XX	CAP, TRIMMER, 15P	
CV7	1-141-138-XX	CAP, TRIMMER, 5PF-8PF	
CV8	1-141-147-XX	CAP, TRIMMER, 15P	
CV9	1-141-138-XX	CAP, TRIMMER, 5PF-8PF	
CV10	1-141-147-XX	CAP, TRIMMER, 15P	
CV11	1-141-138-XX	CAP, TRIMMER, 5PF-8PF	
		IC	
IC1	8-759-145-58	IC UPC4558C	
IC2	8-759-145-58	IC UPC4558C	
IC3	8-759-145-58	IC UPC4558C	
IC4	8-751-300-00	IC CX-130	
IC5	8-751-300-00	IC CX-130	
IC6	8-751-300-00	IC CX-130	
IC7	8-751-300-00	IC CX-130	
IC8	8-759-901-23	IC SN74LS123N	
		CONNECTOR	
Q1	♦:1-508-796-11	PIN, CONNECTOR 2P	
Q2	♦:1-508-796-11	PIN, CONNECTOR 2P	
Q3	♦:1-508-796-11	PIN, CONNECTOR 2P	
Q4	♦:1-508-796-11	PIN, CONNECTOR 2P	
Q5	♦:1-508-796-11	PIN, CONNECTOR 2P	
Q6	♦:1-508-796-11	PIN, CONNECTOR 2P	
Q7	♦:1-508-796-11	PIN, CONNECTOR 2P	
Q8	♦:1-508-797-00	PIN, CONNECTOR 4P	
Q9	♦:1-508-796-11	PIN, CONNECTOR 2P	
Q10	♦:1-508-796-21	PIN, CONNECTOR 2P	
Q11	♦:1-508-796-11	PIN, CONNECTOR 2P	
Q12	♦:1-508-797-00	PIN, CONNECTOR 4P	
Q13	♦:1-508-743-00	PIN, CONNECTOR 5P	
Q14	♦:1-508-796-11	PIN, CONNECTOR 2P	
		TRANSISTOR	
Q1	8-724-375-01	TRANSISTOR 2SC403C	
Q2	8-724-375-01	TRANSISTOR 2SC403C	
Q3	8-729-384-48	TRANSISTOR 2SA844	
Q4	8-729-384-48	TRANSISTOR 2SA844	
Q5	8-729-384-48	TRANSISTOR 2SA844	
Q6	8-724-375-01	TRANSISTOR 2SC403C	
Q7	8-724-375-01	TRANSISTOR 2SC403C	
Q8	8-724-375-01	TRANSISTOR 2SC403C	
Q9	8-729-384-48	TRANSISTOR 2SA844	
Q10	8-729-384-48	TRANSISTOR 2SA844	
Q11	8-729-384-48	TRANSISTOR 2SA844	
Q12	8-724-375-01	TRANSISTOR 2SC403C	
Q13	8-724-375-01	TRANSISTOR 2SC403C	
Q14	8-724-375-01	TRANSISTOR 2SC403C	
Q15	8-729-384-48	TRANSISTOR 2SA844	
Q16	8-729-384-48	TRANSISTOR 2SA844	
Q17	8-729-384-48	TRANSISTOR 2SA844	
Q18	8-724-375-01	TRANSISTOR 2SC403C	
Q19	8-724-375-01	TRANSISTOR 2SC403C	
Q20	8-724-375-01	TRANSISTOR 2SC403C	
Q21	8-729-384-48	TRANSISTOR 2SA844	
Q22	8-729-384-48	TRANSISTOR 2SA844	
Q23	8-729-384-48	TRANSISTOR 2SA844	
Q24	8-724-375-01	TRANSISTOR 2SC403C	
Q25	8-724-375-01	TRANSISTOR 2SC403C	
Q26	=>8-723-301-01	TRANSISTOR 2SK43-11	
Q27	8-724-375-01	TRANSISTOR 2SC403C	
Q28	8-724-375-01	TRANSISTOR 2SC403C	
Q29	8-729-384-48	TRANSISTOR 2SA844	
Q30	8-729-384-48	TRANSISTOR 2SA844	
Q31	8-729-384-48	TRANSISTOR 2SA844	
Q32	8-724-375-01	TRANSISTOR 2SC403C	
Q33	8-724-375-01	TRANSISTOR 2SC403C	
Q34	=>8-723-301-01	TRANSISTOR 2SK43-11	
Q35	8-724-375-01	TRANSISTOR 2SC403C	
Q36	8-724-375-01	TRANSISTOR 2SC403C	
Q37	8-729-384-48	TRANSISTOR 2SA844	
Q38	8-729-384-48	TRANSISTOR 2SA844	
Q39	8-729-384-48	TRANSISTOR 2SA844	
Q40	8-724-375-01	TRANSISTOR 2SC403C	
Q41	8-724-375-01	TRANSISTOR 2SC403C	
Q42	=>8-723-301-01	TRANSISTOR 2SK43-11	
Q43	8-724-375-01	TRANSISTOR 2SC403C	
		RESISTOR	
R1	1-246-783-00	CARBON 1K 5% 1/8W	
R2	1-246-763-00	CARBON 22 5% 1/8W	
R3	1-214-160-00	METAL 15K 1% 1/4W	
R4	1-246-831-00	CARBON 91 5% 1/8W	
R5	1-214-148-00	METAL 4.7K 1% 1/4W	
R6	1-214-151-00	METAL 6.2K 1% 1/4W	
R7	1-246-783-00	CARBON 1K 5% 1/8W	
R8	1-246-852-00	CARBON 5.1K 5% 1/8W	
R10	1-246-835-00	CARBON 200 5% 1/8W	
R11	1-214-147-00	METAL 4.3K 1% 1/4W	
R12	1-246-770-00	CARBON 82 5% 1/8W	
R13	1-246-854-00	CARBON 7.5K 5% 1/8W	
R14	1-246-797-00	CARBON 15K 5% 1/8W	
R15	1-214-140-00	METAL 2.2K 1% 1/4W	
R16	1-214-132-00	METAL 1K 1% 1/4W	
R17	1-246-783-00	CARBON 1K 5% 1/8W	
R18	1-246-763-00	CARBON 22 5% 1/8W	
R19	1-214-160-00	METAL 15K 1% 1/4W	
R20	1-246-831-00	CARBON 91 5% 1/8W	
R21	1-214-148-00	METAL 4.7K 1% 1/4W	
R22	1-214-151-00	METAL 6.2K 1% 1/4W	
R23	1-246-783-00	CARBON 1K 5% 1/8W	
R24	1-246-852-00	CARBON 5.1K 5% 1/8W	
R25	1-246-835-00	CARBON 200 5% 1/8W	
R27	1-214-147-00	METAL 4.3K 1% 1/4W	

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RESISTORS
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COILS
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Ref.No	Part No	Description				Remark
R28	1-246-770-00	CARBON	82	5%	1/8W	
R29	1-246-854-00	CARBON	7.5K	5%	1/8W	
R30	1-246-797-00	CARBON	15K	5%	1/8W	
R31	1-214-139-00	METAL	2K	1%	1/4W	
R32	1-214-100-00	METAL	47	1%	1/4W	
R33	1-214-130-00	METAL	820	1%	1/4W	
R34	1-246-783-00	CARBON	1K	5%	1/8W	
R35	1-246-763-00	CARBON	22	5%	1/8W	
R36	1-214-180-00	METAL	100K	1%	1/4W	
R37	1-246-831-00	CARBON	91	5%	1/8W	
R38	1-214-148-00	METAL	4.7K	1%	1/4W	
R39	1-214-151-00	METAL	6.2K	1%	1/4W	
R40	1-246-783-00	CARBON	1K	5%	1/8W	
R41	1-246-852-00	CARBON	5.1K	5%	1/8W	
R42	1-246-835-00	CARBON	200	5%	1/8W	
R44	1-214-147-00	METAL	4.3K	1%	1/4W	
R45	1-246-770-00	CARBON	82	5%	1/8W	
R46	1-246-854-00	CARBON	7.5K	5%	1/8W	
R47	1-246-797-00	CARBON	15K	5%	1/8W	
R48	1-214-140-00	METAL	2.2K	1%	1/4W	
R49	1-214-132-00	METAL	1K	1%	1/4W	
R50	1-246-783-00	CARBON	1K	5%	1/8W	
R51	1-246-763-00	CARBON	22	5%	1/8W	
R52	1-214-160-00	METAL	15K	1%	1/4W	
R53	1-246-831-00	CARBON	91	5%	1/8W	
R54	1-214-148-00	METAL	4.7K	1%	1/4W	
R55	1-214-151-00	METAL	6.2K	1%	1/4W	
R56	1-246-783-00	CARBON	1K	5%	1/8W	
R57	1-246-852-00	CARBON	5.1K	5%	1/8W	
R58	1-246-835-00	CARBON	200	5%	1/8W	
R60	1-214-147-00	METAL	4.3K	1%	1/4W	
R61	1-246-770-00	CARBON	82	5%	1/8W	
R62	1-246-854-00	CARBON	7.5K	5%	1/8W	
R63	1-246-797-00	CARBON	15K	5%	1/8W	
R64	1-214-139-00	METAL	2K	1%	1/4W	
R65	1-214-100-00	METAL	47	1%	1/4W	
R66	1-214-130-00	METAL	820	1%	1/4W	
R67	1-214-134-00	METAL	1.2K	1%	1/4W	
R68	1-202-473-00	COMPOSITION	5.6M	5%	1/4W	
R69	1-246-795-00	CARBON	10K	5%	1/8W	
R70	1-246-783-00	CARBON	1K	5%	1/8W	
R71	1-246-783-00	CARBON	1K	5%	1/8W	
R72	1-246-784-00	CARBON	1.2K	5%	1/8W	
R73	1-246-784-00	CARBON	1.2K	5%	1/8W	
R74	1-246-841-00	CARBON	620	5%	1/8W	
R75	1-246-783-00	CARBON	1K	5%	1/8W	
R76	1-246-763-00	CARBON	22	5%	1/8W	
R77	1-214-160-00	METAL	15K	1%	1/4W	
R78	1-246-831-00	CARBON	91	5%	1/8W	
R79	1-214-148-00	METAL	4.7K	1%	1/4W	
R80	1-214-151-00	METAL	6.2K	1%	1/4W	
R81	1-246-783-00	CARBON	1K	5%	1/8W	
R82	1-246-852-00	CARBON	5.1K	5%	1/8W	

Ref.No	Part No	Description				Remark
R83	1-246-835-00	CARBON	200	5%	1/8W	
R85	1-214-147-00	METAL	4.3K	1%	1/4W	
R86	1-246-770-00	CARBON	82	5%	1/8W	
R87	1-246-854-00	CARBON	7.5K	5%	1/8W	
R88	1-246-797-00	CARBON	15K	5%	1/8W	
R89	1-214-139-00	METAL	2K	1%	1/4W	
R90	1-214-100-00	METAL	47	1%	1/4W	
R91	1-214-130-00	METAL	820	1%	1/4W	
R92	1-214-134-00	METAL	1.2K	1%	1/4W	
R93	1-202-473-00	COMPOSITION	5.6M	5%	1/4W	
R94	1-246-795-00	CARBON	10K	5%	1/8W	
R95	1-246-783-00	CARBON	1K	5%	1/8W	
R96	1-246-783-00	CARBON	1K	5%	1/8W	
R97	1-246-784-00	CARBON	1.2K	5%	1/8W	
R98	1-246-784-00	CARBON	1.2K	5%	1/8W	
R99	1-246-841-00	CARBON	620	5%	1/8W	
R100	1-246-783-00	CARBON	1K	5%	1/8W	
R101	1-246-763-00	CARBON	22	5%	1/8W	
R102	1-214-160-00	METAL	15K	1%	1/4W	
R103	1-246-831-00	CARBON	91	5%	1/8W	
R104	1-214-148-00	METAL	4.7K	1%	1/4W	
R105	1-214-151-00	METAL	6.2K	1%	1/4W	
R106	1-246-783-00	CARBON	1K	5%	1/8W	
R107	1-246-852-00	CARBON	5.1K	5%	1/8W	
R108	1-246-835-00	CARBON	200	5%	1/8W	
R110	1-214-147-00	METAL	4.3K	1%	1/4W	
R111	1-246-770-00	CARBON	82	5%	1/8W	
R112	1-246-854-00	CARBON	7.5K	5%	1/8W	
R113	1-246-797-00	CARBON	15K	5%	1/8W	
R114	1-214-139-00	METAL	2K	1%	1/4W	
R115	1-214-100-00	METAL	47	1%	1/4W	
R116	1-214-130-00	METAL	820	1%	1/4W	
R117	1-214-134-00	METAL	1.2K	1%	1/4W	
R118	1-202-473-00	COMPOSITION	5.6M	5%	1/4W	
R119	1-246-795-00	CARBON	10K	5%	1/8W	
R120	1-246-783-00	CARBON	1K	5%	1/8W	
R121	1-246-783-00	CARBON	1K	5%	1/8W	
R122	1-246-784-00	CARBON	1.2K	5%	1/8W	
R123	1-246-784-00	CARBON	1.2K	5%	1/8W	
R124	1-246-841-00	CARBON	620	5%	1/8W	
R125	1-246-771-00	CARBON	100	5%	1/8W	
R126	1-246-783-00	CARBON	1K	5%	1/8W	
R128	1-246-771-00	CARBON	100	5%	1/8W	
R129	1-246-771-00	CARBON	100	5%	1/8W	
R131	1-246-771-00	CARBON	100	5%	1/8W	
R132	1-246-771-00	CARBON	100	5%	1/8W	
R133	1-246-771-00	CARBON	100	5%	1/8W	
R134	1-246-783-00	CARBON	1K	5%	1/8W	
R136	1-246-771-00	CARBON	100	5%	1/8W	
R137	1-246-771-00	CARBON	100	5%	1/8W	
R139	1-246-783-00	CARBON	1K	5%	1/8W	
R140	1-246-771-00	CARBON	100	5%	1/8W	
R141	1-214-150-00	METAL	5.6K	1%	1/4W	

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Q G

Ref.No	Part No	Description				Remark
R142	1-246-771-00	CARBON	100	5%	1/8W	
R143	1-246-788-00	CARBON	2.7K	5%	1/8W	
R144	1-246-783-00	CARBON	1K	5%	1/8W	
R145	1-246-823-31	CARBON	20	5%	1/8W	
R146	1-246-823-31	CARBON	20	5%	1/8W	
R147	1-246-823-31	CARBON	20	5%	1/8W	
R149	1-246-783-00	CARBON	1K	5%	1/8W	
R150	1-246-783-00	CARBON	1K	5%	1/8W	
R151	1-246-783-00	CARBON	1K	5%	1/8W	
R152	1-246-783-00	CARBON	1K	5%	1/8W	
R153	1-246-783-00	CARBON	1K	5%	1/8W	
R154	1-246-783-00	CARBON	1K	5%	1/8W	

VARIABLE RESISTOR

RV1	1-224-935-21	RES, ADJ, METAL FILM 200	
RV2	1-224-935-21	RES, ADJ, METAL FILM 200	
RV3	1-224-935-21	RES, ADJ, METAL FILM 200	
RV4	1-224-935-21	RES, ADJ, METAL FILM 200	
RV5	1-224-942-21	RES, ADJ, METAL FILM 50K	
RV6	1-224-935-00	RES, ADJ, METAL FILM 200	

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♦:A-1316-006-A	G BOARD, COMPLETE		E-102
1-533-131-00	HOLDER, FUSE		
♦:4-323-833-00	HERT SINK, PINOUT		
♦:4-323-911-00	HERT SINK (G)		
♦:4-335-908-00	WASHER (S), FITTING, CONTROL		

CAPACITOR

C1	1-161-500-00	CERAMIC			125V
C2	1-123-253-00	ELECT	22MF		160V
C3	1-161-500-00	CERAMIC			125V
C4	1-123-348-00	ELECT	470MF	20%	35V
C5	1-123-348-00	ELECT	470MF	20%	35V
C6	1-101-004-00	CERAMIC	0.01MF		50V
C7	1-125-197-00	ELECT(BLOCK)	820MF		160V
C8	1-125-197-00	ELECT(BLOCK)	820MF		160V
C9	1-123-329-00	ELECT	10MF	20%	25V
C10	1-101-004-00	CERAMIC	0.01MF		50V
C11	1-161-500-00	CERAMIC			125V
C12	1-161-500-00	CERAMIC			125V
C13	1-125-198-00	ELECT(BLOCK)	4700MF		50V
C14	1-123-336-00	ELECT	470MF	20%	25V
C17	1-161-500-00	CERAMIC			125V
C18	1-123-336-00	ELECT	470MF	20%	25V
C19	1-161-500-00	CERAMIC			125V
C20	1-123-336-00	ELECT	470MF	20%	25V
C21	1-125-198-00	ELECT(BLOCK)	4700MF		50V
C22	1-102-973-00	CERAMIC	100PF	5%	50V
C23	1-101-003-00	CERAMIC	0.0047MF		50V
C24	1-101-003-00	CERAMIC	0.0047MF		50V
C25	1-101-003-00	CERAMIC	0.0047MF		50V
C26	1-101-003-00	CERAMIC	0.0047MF		50V
C27	1-125-193-00	ELECT(BLOCK)	4700MF		35V
C28	1-102-973-00	CERAMIC	100PF	5%	50V
C29	1-102-976-00	CERAMIC	180PF	5%	50V
C30	1-102-973-00	CERAMIC	100PF	5%	50V
C31	1-101-003-00	CERAMIC	0.0047MF		50V
C32	1-101-003-00	CERAMIC	0.0047MF		50V
C33	1-101-003-00	CERAMIC	0.0047MF		50V
C34	1-101-003-00	CERAMIC	0.0047MF		50V
C35	1-125-193-00	ELECT(BLOCK)	4700MF		35V
C36	1-102-973-00	CERAMIC	100PF	5%	50V
C37	1-102-976-00	CERAMIC	180PF	5%	50V
C38	1-101-003-00	CERAMIC	0.0047MF		50V
C39	1-101-003-00	CERAMIC	0.0047MF		50V
C40	1-101-003-00	CERAMIC	0.0047MF		50V
C41	1-101-003-00	CERAMIC	0.0047MF		50V
C42	1-125-193-00	ELECT(BLOCK)	4700MF		35V
C43	1-123-328-00	ELECT	4.7MF	20%	25V
C44	1-121-257-00	ELECT	4.7MF		16V
C46	1-123-329-00	ELECT	10MF	20%	25V
C47	1-101-004-00	CERAMIC	0.01MF		50V
C48	1-123-307-00	ELECT	100MF	20%	10V
C49	1-123-316-00	ELECT	10MF	20%	16V
C50	1-123-330-00	ELECT	22MF	20%	25V
C51	1-123-330-00	ELECT	22MF	20%	25V
C52	1-123-320-00	ELECT	100MF	20%	16V
C53	1-108-433-00	MYLAR	0.1MF	10%	200V
C54	1-123-351-00	ELECT	0.47MF	20%	50V

DIODE

D1	=>8-719-911-55	DIODE U05G
D2	=>8-719-911-55	DIODE U05G
D3	=>8-719-911-55	DIODE U05G
D4	=>8-719-911-55	DIODE U05G
D5	=>8-759-157-40	IC UPC574J
D6	8-719-301-01	DIODE SEL101S
D7	=>8-759-157-40	IC UPC574J
D8	⚠8-759-157-41	IC UPC574J-G
D10	⚠8-759-157-41	IC UPC574J-G
D11	⚠8-759-157-41	IC UPC574J-G
D12	⚠8-759-157-41	IC UPC574J-G
D13	⚠8-719-175-24	DIODE RD7.5E-B1Z
D14	=>8-719-500-34	DIODE S3VC40
D15	=>8-719-501-34	DIODE S3VC40R
D18	=>8-719-200-02	DIODE 10E2
D19	8-719-815-55	DIODE 1S1555
D20	=>8-719-500-34	DIODE S3VC40
D21	=>8-719-501-34	DIODE S3VC40R
D25	8-719-815-55	DIODE 1S1555
D26	=>8-719-911-55	DIODE U05G
D27	=>8-719-911-55	DIODE U05G
D28	=>8-719-911-55	DIODE U05G
D29	=>8-719-911-55	DIODE U05G
D30	=>8-719-200-02	DIODE 10E2
D31	8-719-815-55	DIODE 1S1555

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Ref.No	Part No	Description	Remark
D32	=>8-719-911-55	DIODE U05G	
D33	=>8-719-911-55	DIODE U05G	
D34	=>8-719-911-55	DIODE U05G	
D35	=>8-719-911-55	DIODE U05G	
D36	=>8-719-200-02	DIODE 10E2	
D37	8-719-815-55	DIODE 1S1555	
D38	=>8-719-500-34	DIODE S3VC40	
D39	=>8-719-501-34	DIODE S3VC40R	
D40	8-719-175-25	DIODE RD7.5E-B2Z	
D42	8-719-175-26	DIODE RD7.5E-B3Z	
D43	8-719-815-55	DIODE 1S1555	
		FUSE	
F1	⚠1-532-536-00	FUSE, GLASS-TUBE	
F2	⚠1-532-555-00	FUSE, GLASS-TUBE	
		CONNECTOR	
G1	♣:1-508-786-00	2P PLUG (M)	
G2	♣:1-508-743-00	PIN, CONNECTOR 5P	
G3	♣:1-508-742-00	PIN, CONNECTOR 3P	
G4	♣:1-508-845-00	PIN, CONNECTOR 6P	
G5	♣:1-508-742-00	PIN, CONNECTOR 3P	
G6	♣:1-508-796-11	PIN, CONNECTOR 2P	
G7	♣:1-508-742-00	PIN, CONNECTOR 3P	
G8	♣:1-508-742-00	PIN, CONNECTOR 3P	
G9	♣:1-508-797-00	PIN, CONNECTOR 4P	
G10	♣:1-508-797-31	PIN, CONNECTOR 4P	
G11	♣:1-508-845-00	PIN, CONNECTOR 6P	
G12	♣:1-508-797-00	PIN, CONNECTOR 4P	
G13	♣:1-508-797-00	PIN, CONNECTOR 4P	
G14	♣:1-508-797-31	PIN, CONNECTOR 4P	
G15	♣:1-508-796-11	PIN, CONNECTOR 2P	
G16	♣:1-508-765-00	3P PLUG (M)	
G17	♣:1-508-796-21	PIN, CONNECTOR 2P	
		IC	
IC1	8-759-377-23	IC HA17723G	
IC2	8-759-377-23	IC HA17723G	
IC3	8-759-377-23	IC HA17723G	
IC4	8-759-377-23	IC HA17723G	
IC5	8-759-377-23	IC HA17723G	
		TRANSISTOR	
Q1	8-719-000-38	THYRISTOR CR3AM-8	
Q2	8-725-412-00	TRANSISTOR 2SC1124	
Q3	8-762-210-00	TRANSISTOR 2SA840	
Q4	8-762-210-00	TRANSISTOR 2SA840	
Q5	8-762-210-00	TRANSISTOR 2SA840	
Q6	⚠8-719-000-38	THYRISTOR CR3AM-8	
Q7	8-729-307-62	TRANSISTOR 2SD476A	
Q8	8-729-307-62	TRANSISTOR 2SD476A	
Q9	8-762-210-00	TRANSISTOR 2SA840	
Q10	8-729-307-62	TRANSISTOR 2SD476A	
Q11	8-762-210-00	TRANSISTOR 2SA840	
Q12	8-729-663-47	TRANSISTOR 2SC1364	
Q13	8-729-307-62	TRANSISTOR 2SD476A	
Q14	8-719-000-38	THYRISTOR CR3AM-8	
		RESISTOR	
R2	1-214-148-00	METAL 4.7K 1% 1/4W	
R3	1-214-168-00	METAL 33K 1% 1/4W	
R4	1-214-168-00	METAL 33K 1% 1/4W	
R5	1-214-162-00	METAL 18K 1% 1/4W	
R6	1-202-621-00	COMPOSITION 100K 5% 1/2W	
R7	1-213-163-00	METAL 47K 5% 1W	F
R8	1-214-136-00	METAL 1.5K 1% 1/4W	
R9	1-214-170-00	METAL 39K 1% 1/4W	
R10	1-214-142-00	METAL 2.7K 1% 1/4W	
R11	1-214-132-00	METAL 1K 1% 1/4W	
R12	1-214-151-00	METAL 6.2K 1% 1/4W	
R13	1-214-166-00	METAL 27K 1% 1/4W	
R14	⚠1-214-166-00	METAL 27K 1% 1/4W	
R15	⚠1-214-168-00	METAL 33K 1% 1/4W	
R16	1-207-673-00	WEREWOUND 3.3 10% 5W	F
R17	⚠1-214-153-00	METAL 7.5K 1% 1/4W	
R18	⚠1-214-142-00	METAL 2.7K 1% 1/4W	
R19	1-214-149-00	METAL 5.1K 1% 1/4W	
R20	1-214-140-00	METAL 2.2K 1% 1/4W	
R21	1-214-153-00	METAL 7.5K 1% 1/4W	
R22	1-214-143-00	METAL 3K 1% 1/4W	
R23	1-214-160-00	METAL 15K 1% 1/4W	
R24	1-214-120-00	METAL 330 1% 1/4W	
R25	1-212-356-00	METAL 0.47 5% 1W	F
R26	1-214-164-00	METAL 22K 1% 1/4W	
R27	1-214-139-00	METAL 2K 1% 1/4W	
R28	1-214-120-00	METAL 330 1% 1/4W	
R29	1-214-160-00	METAL 15K 1% 1/4W	
R30	1-214-166-00	METAL 27K 1% 1/4W	
R31	1-214-140-00	METAL 2.2K 1% 1/4W	
R32	1-214-157-00	METAL 11K 1% 1/4W	
R33	1-212-356-00	METAL 0.47 5% 1W	F
R36	1-214-132-00	METAL 1K 1% 1/4W	
R37	1-214-132-00	METAL 1K 1% 1/4W	
R38	1-214-136-00	METAL 1.5K 1% 1/4W	
R39	1-214-160-00	METAL 15K 1% 1/4W	
R40	1-214-154-00	METAL 8.2K 1% 1/4W	
R41	1-214-125-00	METAL 510 1% 1/4W	
R42	1-217-194-00	WIREWOUND 0.33 10% 2W	F
R43	1-214-140-00	METAL 2.2K 1% 1/4W	
R44	1-214-148-00	METAL 4.7K 1% 1/4W	
R45	1-214-149-00	METAL 5.1K 1% 1/4W	
R46	1-214-145-00	METAL 3.6K 1% 1/4W	
R47	1-214-140-00	METAL 2.2K 1% 1/4W	
R48	1-212-363-00	METAL 1.8 5% 1W	F
R51	1-214-132-00	METAL 1K 1% 1/4W	
R52	1-214-132-00	METAL 1K 1% 1/4W	

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CAPACITORS
- MF : μF, PF : μμF

RESISTORS
- All resistors are in ohms
- F : nonflammable

COILS
- MMH : mH, UH : μH

G C E

Ref.No	Part No	Description				Remark
R53	⚠1-214-162-00	METAL	18K	1%	1/4W	
R54	⚠1-214-143-00	METAL	3K	1%	1/4W	
R55	1-214-160-00	METAL	15K	1%	1/4W	
R56	1-214-125-00	METAL	510	1%	1/4W	
R57	1-214-154-00	METAL	8.2K	1%	1/4W	
R58	⚠1-214-148-00	METAL	4.7K	1%	1/4W	
R59	⚠1-214-148-00	METAL	4.7K	1%	1/4W	
R60	1-207-906-00	WIREWOUND	0.39	10%	2W	F
R61	1-214-111-00	METAL	130	1%	1/4W	
R62	1-202-633-00	COMPOSITION	330K	5%	1/2W	
R66	1-214-166-00	METAL	27K	1%	1/4W	
R67	⚠1-214-142-00	METAL	2.7K	1%	1/4W	
R68	⚠1-214-168-00	METAL	33K	1%	1/4W	
R69	⚠				1/4W	■
R70	⚠1-214-162-00	METAL	18K	1%	1/4W	
R71	1-214-111-00	METAL	130	1%	1/4W	
R72	1-214-146-00	METAL	3.9K	1%	1/4W	
R73	⚠1-214-153-00	METAL	7.5K	1%	1/4W	
R74	1-213-161-00	METAL	33K	5%	1W	F

VARIABLE RESISTOR

RV1	⚠1-224-938-21	RES, ADJ, METAL FILM 2K				
RV2	1-224-937-21	RES, ADJ, METAL FILM 1K				
RV3	1-224-936-21	RES, ADJ, METAL FILM 500				

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♣:1-600-366-00 C BOARD E-52

1-526-086-XX SOCKET, PICTURE TUBE

CAPACITOR

C1	1-129-953-00	FILM	0.068MF	20%	1.5KV	

CONNECTOR

C1	♣:1-508-796-11	PIN, CONNECTOR 2P
C2	♣:1-508-766-00	4P PLUG (M)
C3	♣:1-508-796-11	PIN, CONNECTOR 2P
C4	♣:1-508-796-11	PIN, CONNECTOR 2P
C5	♣:1-508-796-11	PIN, CONNECTOR 2P

RESISTOR

R1	1-202-838-00	COMPOSITION	100K	10%	1/2W
R2	1-202-818-00	COMPOSITION	1K	10%	1/2W
R3	1-202-818-00	COMPOSITION	1K	10%	1/2W
R4	1-202-838-00	COMPOSITION	100K	10%	1/2W
R5	1-202-818-00	COMPOSITION	1K	10%	1/2W
R6	1-202-818-00	COMPOSITION	1K	10%	1/2W

SPARK GAP

SG1	1-519-063-XX	DISCHARGING GAP
SG2	1-519-063-XX	DISCHARGING GAP
SG3	1-519-063-XX	DISCHARGING GAP
SG4	1-519-063-XX	DISCHARGING GAP
SG5	1-519-063-XX	DISCHARGING GAP
SG6	1-519-063-XX	DISCHARGING GAP

♣:1-601-462-00 DB BOARD E-209

♣:4-337-215-00 BRACKET (DB), PC BOARD

CAPACITOR

C1	1-123-319-00	ELECT	47MF	20%	16V
C2	1-123-319-00	ELECT	47MF	20%	16V

DIODE

D1	8-719-815-55	DIODE 1S1555
D2	8-719-815-55	DIODE 1S1555

CONNECTOR

DB1	♣:1-508-845-00	PIN, CONNECTOR 6P

IC

IC1	8-759-145-58	IC UPC4558C

RESISTOR

R1	1-214-149-00	METAL	5.1K	1%	1/4W
R2	1-214-156-00	METAL	10K	1%	1/4W
R3	1-214-156-00	METAL	10K	1%	1/4W
R4	1-214-149-00	METAL	5.1K	1%	1/4W
R5	1-214-160-00	METAL	15K	1%	1/4W
R6	1-214-156-00	METAL	10K	1%	1/4W
R7	1-214-168-00	METAL	33K	1%	1/4W
R8	1-214-156-00	METAL	10K	1%	1/4W
R9	1-214-132-00	METAL	1K	1%	1/4W
R10	1-212-718-00	METAL	470K	1%	1/2W

VARIABLE RESISTOR

RV1	1-224-931-00	RES, ADJ, METAL FILM 20K
RV2	1-224-931-00	RES, ADJ, METAL FILM 20K
RV3	1-224-931-00	RES, ADJ, METAL FILM 20K
RV4	1-224-931-00	RES, ADJ, METAL FILM 20K

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♣:A-1345-241-A E BOARD, COMPLETE E-101

4-023-455-00	PIECE, CONTACT
4-303-203-00	BUSHING
♣:4-309-762-00	RETAINER (MD-17), TRANSISTOR
♣:4-335-908-00	WASHER (S), FITTING, CONTROL
♣:4-335-909-00	WASHER (L), BRACKET, CONTROL
♣:4-335-913-00	HEAT, SINK (E)
♣:4-335-914-00	HEAT, SINK (E2)
♣:4-335-989-00	HOOK, PVC SHEET

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

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CAPACITORS
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RESISTORS
- All resistors are in ohms
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COILS
- MMH : mH, UH : μH

- The components identified by ■ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

Ref.No	Part No	Description			Remark
		CAPACITOR			
C1	1-108-381-00	MYLAR	0.022MF	10%	100V
C2	1-108-373-00	MYLAR	0.0047MF	10%	100V
C3	1-123-316-00	ELECT	10MF	20%	16V
C4	1-123-352-00	ELECT	1MF	20%	50V
C5	1-108-383-00	MYLAR	0.033MF	10%	100V
C6	1-102-030-00	CERAMIC	330PF	10%	500V
C7	1-121-999-00	ELECT	10MF		160V
C8	1-108-431-00	MYLAR	0.068MF	10%	200V
C9	1-102-973-00	CERAMIC	100PF	5%	50V
C10	1-123-356-00	ELECT	10MF	20%	50V
C11	1-123-349-00	ELECT	1000MF	20%	35V
C12	1-108-431-00	MYLAR	0.068MF	10%	200V
C13	1-123-172-00	ELECT	2.2MF	20%	160V
C14	1-123-349-00	ELECT	1000MF	20%	35V
C15	1-108-429-00	MYLAR	0.047MF	10%	200V
C16	1-108-421-00	MYLAR	0.01MF	10%	200V
C17	1-108-431-00	MYLAR	0.068MF	10%	200V
C18	1-102-244-00	CERAMIC	220PF	10%	500V
C19	1-130-065-00	FILM	5600PF	3%	1.5KV
C20	1-123-093-00	ELECT	22MF	20%	160V
C21	1-123-320-00	ELECT	100MF	20%	16V
C22	1-123-320-00	ELECT	100MF	20%	16V
C23	1-102-228-00	CERAMIC	470PF	10%	500V
C24	1-130-179-00	FILM	2MF	5%	200V
C25	1-130-179-00	FILM	2MF	5%	200V
C26	1-108-377-00	MYLAR	0.01MF	10%	100V
C27	1-103-733-00	POLYSTYRENE	0.0022MF	5%	50V
C28	1-123-319-00	ELECT	47MF	20%	16V
C29	1-123-319-00	ELECT	47MF	20%	16V
C30	1-130-203-00	FILM	0.01MF	5%	50V
C31	1-102-244-00	CERAMIC	220PF	10%	500V
C33	1-123-352-00	ELECT	1MF	20%	50V
C34	1-102-978-00	CERAMIC	220PF	5%	50V
C35	1-123-026-00	ELECT	2.2MF		160V
C36	1-108-383-00	MYLAR	0.033MF	10%	100V
C37	1-129-948-00	FILM	0.02MF	5%	1KV
C38	1-129-948-00	FILM	0.02MF	5%	1KV
C39	1-102-824-00	CERAMIC	430PF	5%	50V
C40	1-129-948-00	FILM	0.02MF	5%	1KV
C41	1-108-389-00	MYLAR	0.1MF	10%	100V
C42	1-108-389-00	MYLAR	0.1MF	10%	100V
C43	1-130-330-00	FILM	1.4MF	5%	200V
C44	1-102-978-00	CERAMIC	220PF	5%	50V
C45	1-108-389-00	MYLAR	0.1MF	10%	100V
		DIODE			
D1	8-719-815-55	DIODE 1S1555			
D2	8-719-815-55	DIODE 1S1555			
D3	8-719-815-55	DIODE 1S1555			
D4	8-719-815-55	DIODE 1S1555			
D5	8-719-815-55	DIODE 1S1555			

Ref.No	Part No	Description	Remark
D6	8-719-815-55	DIODE 1S1555	
D7	=>8-719-300-76	DIODE RH-1A	
D8	=>8-719-200-02	DIODE 10E2	
D9	=>8-719-200-02	DIODE 10E2	
D10	=>8-719-300-76	DIODE RH-1A	
D11	=>8-719-300-76	DIODE RH-1A	
D12	=>8-719-305-15	DIODE GH-3F	
D13	8-719-303-41	DIODE S-34	
D14	=>8-719-305-15	DIODE GH-3F	
D15	8-719-815-55	DIODE 1S1555	
D17	8-719-815-55	DIODE 1S1555	
D18	8-719-815-55	DIODE 1S1555	
D19	8-719-815-55	DIODE 1S1555	
D20	8-719-815-55	DIODE 1S1555	
D21	8-719-815-55	DIODE 1S1555	
D22	=>8-719-931-15	DIODE EQB01-15	
D23	=>8-719-300-76	DIODE RH-1A	
D24	=>8-719-300-76	DIODE RH-1A	
D25	=>8-719-300-70	DIODE RH-1C	
D26	8-719-815-55	DIODE 1S1555	
D27	8-719-815-55	DIODE 1S1555	
D28	8-719-815-55	DIODE 1S1555	
D29	8-719-815-55	DIODE 1S1555	
D30	8-719-815-55	DIODE 1S1555	
D31	8-719-815-55	DIODE 1S1555	
D32	8-719-815-55	DIODE 1S1555	
D33	8-719-815-55	DIODE 1S1555	
D34	8-719-901-19	DIODE V11N	
D35	8-719-815-55	DIODE 1S1555	
D36	8-719-815-55	DIODE 1S1555	
D37	8-719-815-55	DIODE 1S1555	
		CONNECTOR	
E1	♦:1-508-768-00	6P PLUG	
E2	♦:1-508-845-00	PIN, CONNECTOR 6P	
E3	♦:1-508-797-00	PIN, CONNECTOR 4P	
E4	♦:1-508-766-00	4P PLUG (M)	
E5	♦:1-508-768-00	6P PLUG	
E6	♦:1-508-766-00	4P PLUG (M)	
E7	♦:1-508-796-11	PIN, CONNECTOR 2P	
E8	♦:1-508-845-00	PIN, CONNECTOR 6P	
E9	♦:1-508-765-00	3P PLUG (M)	
		IC	
IC1	8-759-145-58	IC UPC4558C	
IC2	8-759-145-58	IC UPC4558C	
IC3	8-759-729-03	IC NJM2903D	
		COIL	
L1	1-408-242-00	MICRO INDUCTOR 10MMH	
L2	1-435-055-21	COIL, PHASE ADJUST	
L3	1-407-841-00	COIL 15UH	
L5	1-459-104-00	COIL, DUST CORE HCC	
L6	1-421-368-00	COIL, VAR FERRITE (HLC)	

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E

Ref.No	Part No	Description	Remark
L7	1-421-364-00	COIL, FERRITE CHOKE PCC	
L8	1-408-236-00	MICRO INDUCTOR 2.7MMH	
L9	1-408-240-00	MICRO INDUCTOR 6.8MMH	
L10	1-408-247-00	MICRO INDUCTOR 33MMH	
		TRANSISTOR	
Q1	=>8-729-612-77	TRANSISTOR 2SA1027R	
Q2	8-729-663-47	TRANSISTOR 2SC1364	
Q3	=>8-729-307-82	TRANSISTOR 2SD478	
Q4	=>8-769-200-40	TRANSISTOR 2SK107-4	
Q5	=>8-729-612-77	TRANSISTOR 2SA1027R	
Q6	8-765-020-00	TRANSISTOR 2SA884	
Q7	8-765-012-20	TRANSISTOR 2SC1811	
Q8	8-729-309-36	TRANSISTOR 2SA893A	
Q9	=>8-729-326-82	TRANSISTOR 2SB568	
Q10	8-729-309-06	TRANSISTOR 2SC1890A	
Q11	=>8-729-307-82	TRANSISTOR 2SD478	
Q12	8-765-012-20	TRANSISTOR 2SC1811	
Q13	=>8-729-307-82	TRANSISTOR 2SD478	
Q14	8-729-326-82	TRANSISTOR 2SB568	
Q15	8-726-420-00	THYRISTOR SG-264A	
Q16	=>8-729-307-82	TRANSISTOR 2SD478	
Q17	8-729-309-06	TRANSISTOR 2SC1890A	
Q18	8-729-309-06	TRANSISTOR 2SC1890A	
Q19	8-729-663-47	TRANSISTOR 2SC1364	
Q20	8-765-222-20	TRANSISTOR 2SC1963	
Q21	8-765-020-00	TRANSISTOR 2SA884	
Q22	8-729-663-47	TRANSISTOR 2SC1364	
Q23	=>8-729-468-43	TRANSISTOR 2SA684	
Q26	8-763-623-00	TRANSISTOR 2SC1810	
Q27	8-729-663-47	TRANSISTOR 2SC1364	
Q28	8-729-663-47	TRANSISTOR 2SC1364	
Q29	=>8-729-366-81	TRANSISTOR 2SD668	
Q30	=>8-763-623-00	TRANSISTOR 2SC1810	
Q31	=>8-763-623-00	TRANSISTOR 2SC1810	
Q32	=>8-763-623-00	TRANSISTOR 2SC1810	
		RESISTOR	
R1	1-246-492-00	CARBON 6.2K 5% 1/4W	
R2	1-246-501-00	CARBON 15K 5% 1/4W	
R3	1-246-497-00	CARBON 10K 5% 1/4W	
R4	1-246-473-00	CARBON 1K 5% 1/4W	
R5	1-246-473-00	CARBON 1K 5% 1/4W	
R6	1-246-489-00	CARBON 4.7K 5% 1/4W	
R7	1-246-489-00	CARBON 4.7K 5% 1/4W	
R8	1-246-513-00	CARBON 47K 5% 1/4W	
R9	1-246-521-00	CARBON 100K 5% 1/4W	
R10	1-246-503-00	CARBON 18K 5% 1/4W	
R11	1-246-529-00	CARBON 220K 5% 1/4W	
R12	1-246-449-00	CARBON 100 5% 1/4W	
R13	1-247-005-00	CARBON 100 5% 1/4W	F
R14	1-213-147-00	METAL 2.2K 5% 1W	F
R15	1-214-168-00	METAL 33K 1% 1/4W	
R16	1-214-172-00	METAL 47K 1% 1/4W	
R17	1-246-520-00	CARBON 91K 5% 1/4W	
R18	1-246-521-00	CARBON 100K 5% 1/4W	
R19	1-246-504-00	CARBON 20K 5% 1/4W	
R20	1-246-494-00	CARBON 7.5K 5% 1/4W	
R21	1-246-473-00	CARBON 1K 5% 1/4W	
R22	1-213-137-00	METAL 330 5% 1W	F
R23	1-246-481-00	CARBON 2.2K 5% 1/4W	
R24	1-246-491-00	CARBON 5.6K 5% 1/4W	
R25	1-213-143-00	METAL 1K 5% 1W	F
R26	1-246-441-00	CARBON 47 5% 1/4W	
R27	1-246-453-00	CARBON 150 5% 1/4W	
R28	1-212-361-00	METAL 1.2 5% 1W	F
R29	1-212-361-00	METAL 1.2 5% 1W	F
R30	1-213-140-00	METAL 560 5% 1W	F
R31	1-212-366-00	METAL 3.3 5% 1W	F
R32	1-246-473-00	CARBON 1K 5% 1/4W	
R33	1-246-481-00	CARBON 2.2K 5% 1/4W	
R34	1-246-489-00	CARBON 4.7K 5% 1/4W	
R35	1-212-356-00	METAL 0.47 5% 1W	F
R36	1-213-129-00	METAL 68 5% 1W	F
R37	1-246-997-00	CARBON 1.2 5% 1/4W	F
R38	1-206-672-00	METAL 2.2K 5% 2W	F
R39	1-211-550-00	CARBON 1.8K 5% 1/4W	F
R40	1-247-027-00	CARBON 6.8 5% 1/8W	F
R41	1-246-476-00	CARBON 1.3K 5% 1/4W	
R42	1-213-162-00	METAL 39K 5% 1W	F
R43	1-246-521-00	CARBON 100K 5% 1/4W	
R44	1-246-489-00	CARBON 4.7K 5% 1/4W	
R45	1-246-513-00	CARBON 47K 5% 1/4W	
R46	1-214-154-00	METAL 8.2K 1% 1/4W	
R47	1-246-514-00	CARBON 51K 5% 1/4W	
R48	1-214-146-00	METAL 3.9K 1% 1/4W	
R49	1-246-483-00	CARBON 2.7K 5% 1/4W	
R50	1-246-487-00	CARBON 3.9K 5% 1/4W	
R51	1-246-483-00	CARBON 2.7K 5% 1/4W	
R52	1-214-154-00	METAL 8.2K 1% 1/4W	
R53	1-246-491-00	CARBON 5.6K 5% 1/4W	
R54	1-246-473-00	CARBON 1K 5% 1/4W	
R55	1-246-491-00	CARBON 5.6K 5% 1/4W	
R56	1-214-146-00	METAL 3.9K 1% 1/4W	
R57	1-246-487-00	CARBON 3.9K 5% 1/4W	
R58	1-246-489-00	CARBON 4.7K 5% 1/4W	
R59	1-213-124-00	METAL 27 5% 1W	F
R60	1-213-127-00	METAL 47 5% 1W	F
R61	1-214-156-00	METAL 10K 1% 1/4W	
R62	1-214-172-00	METAL 47K 1% 1/4W	
R64	1-214-144-00	METAL 3.3K 1% 1/4W	
R65	1-214-158-00	METAL 12K 1% 1/4W	
R66	1-246-482-00	CARBON 2.4K 5% 1/4W	
R67	1-246-473-00	CARBON 1K 5% 1/4W	
R69	1-246-490-00	CARBON 5.1K 5% 1/4W	
R71A	1-246-505-00	CARBON 22K 5% 1/4W	
R71B	1-213-151-00	METAL 4.7K 5% 1W	F
R72	1-246-497-00	CARBON 10K 5% 1/4W	

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

- =>: Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.
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- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

CAPACITORS
- MF : μF, PF : μμF

RESISTORS
- All resistors are in ohms
- F : nonflammable

COILS
- MMH : mH, UH : μH

Ref.No	Part No	Description				Remark
R73	1-246-473-00	CARBON	1K	5%	1/4W	
R74	1-206-676-00	METAL	3.3K	5%	2W	F
R75	1-202-629-00	COMPOSITION	220K	5%	1/2W	
R76	1-246-997-00	CARBON	1.2	5%	1/4W	F
R77	1-202-641-00	COMPOSITION	680K	5%	1/2W	
R78	1-202-651-15	COMPOSITION	1.8M	5%	1/2W	
R79	1-202-633-00	COMPOSITION	330K	5%	1/2W	
R80	1-246-499-00	CARBON	12K	5%	1/4W	
R81	1-246-545-00	COMPOSITION	1M	5%	1/4W	
R82	1-214-157-00	METAL	11K	1%	1/4W	
R83	1-214-180-00	METAL	100K	1%	1/4W	
R84	1-214-180-00	METAL	100K	1%	1/4W	
R85	1-214-180-00	METAL	100K	1%	1/4W	
R86	1-214-177-00	METAL	75K	1%	1/4W	
R87	1-214-162-00	METAL	18K	1%	1/4W	
R89	1-246-545-00	COMPOSITION	1M	5%	1/4W	
R90	1-214-145-00	METAL	3.6K	1%	1/4W	
R91	1-214-108-00	METAL	100	1%	1/4W	
R92	1-214-158-00	METAL	12K	1%	1/4W	
R93	1-246-497-00	CARBON	10K	5%	1/4W	
R94	1-214-167-00	METAL	30K	1%	1/4W	
R95	1-246-497-00	CARBON	10K	5%	1/4W	
R96	1-206-676-00	METAL	3.3K	5%	2W	F
R97	1-211-427-00	CARBON	100	5%	1/8W	F
R98	1-206-664-00	METAL	1K	5%	2W	F
R99	1-246-449-00	CARBON	100	5%	1/4W	
R100	1-246-527-00	CARBON	180K	5%	1/4W	
R101	1-246-497-00	CARBON	10K	5%	1/4W	
R102	1-246-497-00	CARBON	10K	5%	1/4W	
R103	1-246-497-00	CARBON	10K	5%	1/4W	
R104	1-246-545-00	COMPOSITION	1M	5%	1/4W	
R105	1-246-487-00	CARBON	3.9K	5%	1/4W	
R106	1-214-154-00	METAL	8.2K	1%	1/4W	
R107	1-246-457-00	CARBON	220	5%	1/4W	
R108	1-246-449-00	CARBON	100	5%	1/4W	
R109	1-246-449-00	CARBON	100	5%	1/4W	
R110	1-206-459-00	METAL	6.8	5%	2W	F

VARIABLE RESISTOR

RV1	1-224-921-11	RES, ADJ, METAL FILM 20K
RV2	1-224-921-11	RES, ADJ, METAL FILM 20K
RV3	1-224-920-00	RES, ADJ, METAL FILM 10K
RV4	1-224-918-00	RES, ADJ, METAL FILM 2K
RV5	1-224-919-00	RES, ADJ, METAL FILM 5K
RV6	1-224-919-00	RES, ADJ, METAL FILM 5K
RV7	1-224-937-21	RES, ADJ, METAL FILM 1K
RV8	1-226-114-00	RES, ADJ, METAL GLAZE 2.2M
RV9	1-226-699-00	RES, ADJ, CERMET 50K
RV10	1-224-940-21	RES, ADJ, METAL FILM 10K

TRANSFORMER

T1	1-421-365-00	TRANSFORMER, FERRITE (P.O.T)
T2	1-437-071-00	TRANSFORMER, HORIZONTAL DRIVE
T3	1-439-241-00	TRANSFORMER, HORIZONTAL OUTPUT
T4	1-407-849-00	TRANSFORMER, D.F

THERMISTOR

TH-1	1-800-202-XX	THERMISTOR S-10K

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♦:A-1345-307-A	DA BOARD, COMPLETE	P	E-203
♦:A-1345-242-A	DA BOARD, COMPLETE	PM	E-203
♦:4-335-908-00	WASHER (S), FITTING, CONTROL		
♦:4-335-909-00	WASHER (L), BRACKET, CONTROL		

CAPACITOR

C1	1-101-004-00	CERAMIC	0.01MF		50V
C2	1-101-004-00	CERAMIC	0.01MF		50V
C3	1-101-004-00	CERAMIC	0.01MF		50V
C4	1-101-004-00	CERAMIC	0.01MF		50V
C5	1-101-004-00	CERAMIC	0.01MF		50V
C6	1-101-004-00	CERAMIC	0.01MF		50V
C7	1-101-004-00	CERAMIC	0.01MF		50V
C8	1-101-004-00	CERAMIC	0.01MF		50V
C9	1-101-004-00	CERAMIC	0.01MF		50V
C10	1-101-004-00	CERAMIC	0.01MF		50V
C11	1-101-004-00	CERAMIC	0.01MF		50V
C12	1-101-004-00	CERAMIC	0.01MF		50V
C13	1-123-316-00	ELECT	10MF	20%	16V
C14	1-108-393-00	MYLAR	0.22MF	10%	100V
C15	1-108-383-00	MYLAR	0.033MF	10%	100V
C16	1-108-385-00	MYLAR	0.047MF	10%	100V
C17	1-108-385-00	MYLAR	0.047MF	10%	100V
C18	1-108-385-00	MYLAR	0.047MF	10%	100V
C19	1-121-806-00	ELECT	10MF	20%	16V
C20	1-123-328-00	ELECT	4.7MF	20%	25V
C21	1-130-270-00	FILM	0.1MF	5%	100V
C22	1-121-806-00	ELECT	10MF	20%	16V
C23	1-123-351-00	ELECT	0.47MF	20%	50V
C24	1-108-383-00	MYLAR	0.033MF	10%	100V
C25	1-130-270-00	FILM	0.1MF	5%	100V
C26	1-101-004-00	CERAMIC	0.01MF		50V
C27	1-101-004-00	CERAMIC	0.01MF		50V
C28	1-101-004-00	CERAMIC	0.01MF		50V
C29	1-108-385-00	MYLAR	0.047MF	10%	100V
C30	1-123-319-00	ELECT	47MF	20%	16V
C31	1-123-319-00	ELECT	47MF	20%	16V
C32	1-123-319-00	ELECT	47MF	20%	16V
C33	1-108-381-00	MYLAR	0.022MF	10%	100V
C34	1-129-899-00	FILM	0.056MF	2%	100V
C35	1-108-377-00	MYLAR	0.01MF	10%	100V

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RESISTORS
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COILS
- MMH : mH, UH : μH

DA

Ref.No	Part No	Description			Remark
C36	1-129-899-00	FILM	0.056MF	2%	100V
C37	1-108-385-00	MYLAR	0.047MF	10%	100V
C38	1-108-377-00	MYLAR	0.01MF	10%	100V
C39	1-123-319-00	ELECT	47MF	20%	16V
C40	1-130-270-00	FILM	0.1MF	5%	100V
C41	1-123-353-00	ELECT	2.2MF	20%	50V
C42	1-101-004-00	CERAMIC	0.01MF		50V
C43	1-101-004-00	CERAMIC	0.01MF		50V
C44	1-101-004-00	CERAMIC	0.01MF		50V
C45	1-130-270-00	FILM	0.1MF	5%	100V
C46	1-130-270-00	FILM	0.1MF	5%	100V
C47	1-123-319-00	ELECT	47MF	20%	16V
C48	1-123-319-00	ELECT	47MF	20%	16V
C49	1-101-004-00	CERAMIC	0.01MF		50V
C50	1-101-004-00	CERAMIC	0.01MF		50V
C51	1-101-004-00	CERAMIC	0.01MF		50V
C52	1-123-352-00	ELECT	1MF	20%	50V
C53	1-123-352-00	ELECT	1MF	20%	50V
C54	1-108-393-00	MYLAR	0.22MF	10%	100V
C55	1-123-352-00	ELECT	1MF	20%	50V
C56	1-108-381-00	MYLAR	0.022MF	10%	100V
C57	1-102-824-00	CERAMIC	430PF	5%	50V
C58	1-123-320-00	ELECT	100MF	20%	16V
C59	1-123-316-00	ELECT	10MF	20%	16V
C60	1-129-927-00	FILM	0.015MF	5%	100V
C61	1-106-188-00	MYLAR	0.0047MF	5%	100V
C62	1-123-319-00	ELECT	47MF	20%	16V
C63	1-108-387-00	MYLAR	0.068MF	10%	100V
C64	1-121-806-00	ELECT	10MF	20%	16V
C65	1-102-848-00	CERAMIC	180PF	5%	50V
C66	1-102-848-00	CERAMIC	180PF	5%	50V
C67	1-123-319-00	ELECT	47MF	20%	16V
C68	1-123-319-00	ELECT	47MF	20%	16V
C69	1-102-973-00	CERAMIC	100PF	5%	50V
C70	1-101-004-00	CERAMIC	0.01MF		50V
C71	1-129-793-00	FILM	0.047MF	5%	100V P
C71	1-130-072-00	FILM	0.022MF	2%	100V PM

DIODE

D1	8-719-815-55	DIODE 1S1555
D2	8-719-815-55	DIODE 1S1555
D3	8-719-815-55	DIODE 1S1555
D4	8-719-815-55	DIODE 1S1555
D5	8-719-815-55	DIODE 1S1555
D6	8-719-815-55	DIODE 1S1555
D7	8-719-815-55	DIODE 1S1555
D8	8-719-815-55	DIODE 1S1555
D9	8-719-815-55	DIODE 1S1555
D10	8-719-815-55	DIODE 1S1555
D11	8-719-815-55	DIODE 1S1555
D12	=>8-719-422-21	DIODE 1T22AM
D13	=>8-719-422-21	DIODE 1T22AM
D14	8-719-815-55	DIODE 1S1555
D15	8-719-815-55	DIODE 1S1555

Ref.No	Part No	Description	Remark
		CONNECTOR	
DA1	♣:1-508-742-00	PIN, CONNECTOR 3P	
DA2	♣:1-508-845-00	PIN, CONNECTOR 6P	
DA3	♣:1-508-797-00	PIN, CONNECTOR 4P	
DA4	♣:1-508-796-21	PIN, CONNECTOR 2P	
DA5	♣:1-508-796-11	PIN, CONNECTOR 2P	
DA6	♣:1-508-796-11	PIN, CONNECTOR 2P	
DA7	♣:1-508-797-00	PIN, CONNECTOR 4P	
DA8	♣:1-508-845-00	PIN, CONNECTOR 6P	
DA9	♣:1-508-797-31	PIN, CONNECTOR 4P	
DA10	♣:1-508-796-21	PIN, CONNECTOR 2P	
DA11	♣:1-508-846-00	PIN, CONNECTOR 8P	
DA12	♣:1-508-846-00	PIN, CONNECTOR 8P	
DA13	♣:1-508-742-00	PIN, CONNECTOR 3P	
DA14	♣:1-508-742-00	PIN, CONNECTOR 3P	
DA15	♣:1-508-845-00	PIN, CONNECTOR 6P	
		IC	
IC1	8-759-145-58	IC UPC4558C	
IC2	8-759-145-58	IC UPC4558C	
IC3	8-759-115-55	IC UPC1555C	
IC4	8-759-115-55	IC UPC1555C	
IC5	8-759-900-00	IC SN74LS00N	
IC6	8-759-145-58	IC UPC4558C	
IC7	8-759-145-58	IC UPC4558C	
IC8	8-751-580-00	IC CX-158	
IC9	8-759-901-23	IC SN74LS123N	
		COIL	
L1	1-408-243-00	MICRO INDUCTOR 12MMH	
L2	1-408-160-00	MICRO INDUCTOR 15.75MM	
L3	1-408-243-00	MICRO INDUCTOR 12MMH	
L4	1-408-243-00	MICRO INDUCTOR 12MMH	
		TRANSISTOR	
Q1	=>8-729-612-77	TRANSISTOR 2SA1027R	
Q2	8-729-663-47	TRANSISTOR 2SC1364	
Q3	8-729-663-47	TRANSISTOR 2SC1364	
Q4	8-729-306-92	TRANSISTOR 2SD669A	
Q5	8-729-304-92	TRANSISTOR 2SB649A	
Q6	8-729-663-47	TRANSISTOR 2SC1364	
Q7	8-729-306-92	TRANSISTOR 2SD669A	
Q8	8-729-304-92	TRANSISTOR 2SB649A	
Q9	8-729-663-47	TRANSISTOR 2SC1364	
Q10	=>8-729-612-77	TRANSISTOR 2SA1027R	
Q11	8-729-663-47	TRANSISTOR 2SC1364	
Q12	8-761-622-00	TRANSISTOR 2SC1636	
Q13	8-761-622-00	TRANSISTOR 2SC1636	
Q14	8-761-622-00	TRANSISTOR 2SC1636	
Q15	=>8-729-612-77	TRANSISTOR 2SA1027R	
Q16	8-729-663-47	TRANSISTOR 2SC1364	
Q17	8-729-663-47	TRANSISTOR 2SC1364	
Q18	8-729-663-47	TRANSISTOR 2SC1364	
Q19	8-729-663-47	TRANSISTOR 2SC1364	

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RESISTORS
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COILS
- MMH : mH, UH : μH

- P : BVM-1301P
  PM: BVM-1301PM

Ref.No	Part No	Description				Remark
Q20	8-729-663-47	TRANSISTOR 2SC1364				
Q21	8-729-663-47	TRANSISTOR 2SC1364				
Q22	8-729-663-47	TRANSISTOR 2SC1364				
Q23	8-729-663-47	TRANSISTOR 2SC1364				
Q24	8-729-663-47	TRANSISTOR 2SC1364				
Q25	8-729-663-47	TRANSISTOR 2SC1364				
Q26	8-729-663-47	TRANSISTOR 2SC1364				
Q27	8-729-663-47	TRANSISTOR 2SC1364				
Q28	8-729-663-47	TRANSISTOR 2SC1364				
Q29	8-729-663-47	TRANSISTOR 2SC1364				
Q30	8-729-663-47	TRANSISTOR 2SC1364				
Q31	8-729-663-47	TRANSISTOR 2SC1364				
Q32	8-729-663-47	TRANSISTOR 2SC1364				
Q33	8-729-663-47	TRANSISTOR 2SC1364				
		RESISTOR				
R1	1-214-178-00	METAL	82K	1%	1/4W	
R2	1-214-162-00	METAL	18K	1%	1/4W	
R3	1-214-178-00	METAL	82K	1%	1/4W	
R4	1-214-162-00	METAL	18K	1%	1/4W	
R5	1-214-178-00	METAL	82K	1%	1/4W	
R6	1-214-162-00	METAL	18K	1%	1/4W	
R7	1-246-787-00	CARBON	2.2K	5%	1/8W	
R8	1-246-771-00	CARBON	100	5%	1/8W	
R9	1-213-155-00	METAL	10K	5%	1W	F
R10	1-246-797-00	CARBON	15K	5%	1/8W	
R11	1-246-849-00	CARBON	3K	5%	1/8W	
R12	1-246-836-00	CARBON	240	5%	1/8W	
R13	1-246-795-00	CARBON	10K	5%	1/8W	
R14	1-246-799-00	CARBON	22K	5%	1/8W	
R15	1-246-787-00	CARBON	2.2K	5%	1/8W	
R16	1-246-787-00	CARBON	2.2K	5%	1/8W	
R17	1-246-859-00	CARBON	20K	5%	1/8W	
R18	1-246-772-00	CARBON	120	5%	1/8W	
R19	1-246-787-00	CARBON	2.2K	5%	1/8W	
R20	1-246-981-00	CARBON	4.7	5%	1/8W	F
R21	1-246-981-00	CARBON	4.7	5%	1/8W	F
R22	1-246-795-00	CARBON	10K	5%	1/8W	
R23	1-214-180-00	METAL	100K	1%	1/4W	
R24	1-246-803-00	CARBON	47K	5%	1/8W	
R25	1-246-807-00	CARBON	100K	5%	1/8W	
R26	1-246-795-00	CARBON	10K	5%	1/8W	
R27	1-246-795-00	CARBON	10K	5%	1/8W	
R28	1-212-718-00	METAL	470K	1%	1/2W	
R29	1-246-807-00	CARBON	100K	5%	1/8W	
R30	1-213-127-00	METAL	47	5%	1W	F
R31	1-246-866-00	CARBON	75K	5%	1/8W	
R32	1-246-795-00	CARBON	10K	5%	1/8W	
R33	1-247-059-00	CARBON	620K	5%	1/8W	
R34	1-246-762-00	CARBON	18	5%	1/8W	
R35	1-246-786-00	CARBON	1.8K	5%	1/8W	
R36	1-246-981-00	CARBON	4.7	5%	1/8W	F
R37	1-246-981-00	CARBON	4.7	5%	1/8W	F

Ref.No	Part No	Description				Remark
R38	1-213-137-00	METAL	330	5%	1W	F
R39	1-213-137-00	METAL	330	5%	1W	F
R40	1-246-803-00	CARBON	47K	5%	1/8W	
R41	1-246-807-00	CARBON	100K	5%	1/8W	
R42	1-212-722-00	METAL	680K	1%	1/2W	P
R42	1-212-718-00	METAL	470K	1%	1/2W	PM
R43	1-246-771-00	CARBON	100	5%	1/8W	
R44	1-214-156-00	METAL	10K	1%	1/4W	
R45	1-214-154-00	METAL	8.2K	1%	1/4W	
R46	1-214-138-00	METAL	1.8K	1%	1/4W	
R47	1-214-156-00	METAL	10K	1%	1/4W	
R48	1-214-180-00	METAL	100K	1%	1/4W	
R49	1-214-132-00	METAL	1K	1%	1/4W	
R50	1-214-164-00	METAL	22K	1%	1/4W	
R51	1-246-807-00	CARBON	100K	5%	1/8W	
R52	1-214-116-00	METAL	220	1%	1/4W	
R53	1-214-160-00	METAL	15K	1%	1/4W	
R54	1-214-125-00	METAL	510	1%	1/4W	
R55	1-246-807-00	CARBON	100K	5%	1/8W	
R56	1-246-807-00	CARBON	100K	5%	1/8W	
R57	1-214-150-00	METAL	5.6K	1%	1/4W	
R58	1-214-148-00	METAL	4.7K	1%	1/4W	
R59	1-246-783-00	CARBON	1K	5%	1/8W	
R60	1-246-795-00	CARBON	10K	5%	1/8W	
R61	1-246-795-00	CARBON	10K	5%	1/8W	
R62	1-214-145-00	METAL	3.6K	1%	1/4W	
R63	1-214-150-00	METAL	5.6K	1%	1/4W	
R64	1-246-803-00	CARBON	47K	5%	1/8W	
R65	1-246-864-00	CARBON	51K	5%	1/8W	
R66	1-246-789-00	CARBON	3.3K	5%	1/8W	
R67	1-246-864-00	CARBON	51K	5%	1/8W	
R68	1-246-795-00	CARBON	10K	5%	1/8W	
R69	1-246-848-00	CARBON	2.4K	5%	1/8W	
R70	1-246-795-00	CARBON	10K	5%	1/8W	
R71	1-214-155-00	METAL	9.1K	1%	1/4W	
R72	1-246-803-00	CARBON	47K	5%	1/8W	
R73	1-246-783-00	CARBON	1K	5%	1/8W	
R74	1-246-803-00	CARBON	47K	5%	1/8W	
R75	1-246-803-00	CARBON	47K	5%	1/8W	
R76	1-246-795-00	CARBON	10K	5%	1/8W	
R77	1-246-791-00	CARBON	4.7K	5%	1/8W	
R78	1-214-156-00	METAL	10K	1%	1/4W	
R79	1-246-783-00	CARBON	1K	5%	1/8W	
R80	1-246-795-00	CARBON	10K	5%	1/8W	
R81	1-246-795-00	CARBON	10K	5%	1/8W	
R82	1-246-795-00	CARBON	10K	5%	1/8W	
R83	1-246-795-00	CARBON	10K	5%	1/8W	
R84	1-246-795-00	CARBON	10K	5%	1/8W	
R85	1-246-795-00	CARBON	10K	5%	1/8W	
R86	1-246-795-00	CARBON	10K	5%	1/8W	
R87	1-246-864-00	CARBON	51K	5%	1/8W	
R88	1-246-795-00	CARBON	10K	5%	1/8W	
R89	1-246-783-00	CARBON	1K	5%	1/8W	

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

- =>: Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.

- Items marked " ♦ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

CAPACITORS
- MF : μF, PF : μμF

RESISTORS
- All resistors are in ohms
- F : nonflammable

COILS
- MMH : mH, UH : μH

DA

Ref.No	Part No	Description				Remark
R90	1-246-864-00	CARBON	51K	5%	1/8W	
R91	1-246-795-00	CARBON	10K	5%	1/8W	
R92	1-246-783-00	CARBON	1K	5%	1/8W	
R93	1-214-947-21	METAL	2.7M	1%	1/2W	P
R93	1-214-945-00	METAL	2.2M	1%	1/2W	PM
R94	1-246-803-00	CARBON	47K	5%	1/8W	
R95	1-246-807-00	CARBON	100K	5%	1/8W	
R96	1-214-141-00	METAL	2.4K	1%	1/4W	
R97	1-214-172-00	METAL	47K	1%	1/4W	
R98	1-214-947-21	METAL	2.7M	1%	1/2W	P
R98	1-214-945-00	METAL	2.2M	1%	1/2W	PM
R99	1-214-116-00	METAL	220	1%	1/4W	
R100	1-246-807-00	CARBON	100K	5%	1/8W	
R101	1-246-795-00	CARBON	10K	5%	1/8W	
R102	1-246-803-00	CARBON	47K	5%	1/8W	
R103	1-212-718-00	METAL	470K	1%	1/2W	
R104	1-214-116-00	METAL	220	1%	1/4W	
R105	1-246-807-00	CARBON	100K	5%	1/8W	
R106	1-246-795-00	CARBON	10K	5%	1/8W	
R107	1-246-807-00	CARBON	100K	5%	1/8W	
R108	1-246-807-00	CARBON	100K	5%	1/8W	
R109	1-214-947-21	METAL	2.7M	1%	1/2W	P
R109	1-214-945-00	METAL	2.2M	1%	1/2W	PM
R110	1-246-803-00	CARBON	47K	5%	1/8W	
R111	1-246-803-00	CARBON	47K	5%	1/8W	
R112	1-246-807-00	CARBON	100K	5%	1/8W	
R113	1-214-156-00	METAL	10K	1%	1/4W	
R114	1-214-150-00	METAL	5.6K	1%	1/4W	
R115	1-214-177-00	METAL	75K	1%	1/4W	
R116	1-214-947-21	METAL	2.7M	1%	1/2W	P
R116	1-214-945-00	METAL	2.2M	1%	1/2W	PM
R117	1-214-108-00	METAL	100	1%	1/4W	
R118	1-246-807-00	CARBON	100K	5%	1/8W	
R119	1-246-807-00	CARBON	100K	5%	1/8W	
R120	1-246-807-00	CARBON	100K	5%	1/8W	
R121	1-246-864-00	CARBON	51K	5%	1/8W	
R122	1-246-795-00	CARBON	10K	5%	1/8W	
R123	1-246-848-00	CARBON	2.4K	5%	1/8W	
R125	1-246-789-00	CARBON	3.3K	5%	1/8W	
R126	1-246-785-00	CARBON	1.5K	5%	1/8W	
R127	1-214-132-00	METAL	1K	1%	1/4W	
R128	1-214-146-00	METAL	3.9K	1%	1/4W	
R129	1-246-775-00	CARBON	220	5%	1/8W	
R130	1-246-763-00	CARBON	22	5%	1/8W	
R131	1-214-138-00	METAL	1.8K	1%	1/4W	
R132	1-246-766-00	CARBON	39	5%	1/8W	
R133	1-246-794-00	CARBON	8.2K	5%	1/8W	
R134	1-246-795-00	CARBON	10K	5%	1/8W	
R135	1-246-850-00	CARBON	36K	5%	1/8W	
R136	1-246-792-00	CARBON	5.6K	5%	1/8W	
R137	1-214-149-00	METAL	5.1K	1%	1/4W	
R138	1-214-134-00	METAL	1.2K	1%	1/4W	P

Ref.No	Part No	Description				Remark
R138	1-214-141-00	METAL	2.4K	1%	1/4W	PM
R139	1-214-180-00	METAL	100K	1%	1/4W	
R140	1-214-180-00	METAL	100K	1%	1/4W	
R141	1-214-180-00	METAL	100K	1%	1/4W	
R142	1-214-180-00	METAL	100K	1%	1/4W	
R143	1-246-795-00	CARBON	10K	5%	1/8W	
R144	1-214-149-00	METAL	5.1K	1%	1/4W	
R145	1-214-165-00	METAL	24K	1%	1/4W	
R146	1-246-807-00	CARBON	100K	5%	1/8W	
R147	1-246-545-00	COMPOSITION	1M	5%	1/4W	
R148	1-212-718-00	METAL	470K	1%	1/2W	
R149	1-212-711-00	METAL	240K	1%	1/2W	
R150	1-202-473-00	COMPOSITION	5.6M	5%	1/4W	
R151	1-214-141-00	METAL	2.4K	1%	1/4W	
R152	1-246-545-00	COMPOSITION	1M	5%	1/4W	
R153	1-246-545-00	COMPOSITION	1M	5%	1/4W	

VARIABLE RESISTOR

RV1	1-224-921-11	RES, ADJ, METAL FILM	20K
RV2	1-224-920-00	RES, ADJ, METAL FILM	10K
RV3	1-224-921-11	RES, ADJ, METAL FILM	20K
RV4	1-224-920-00	RES, ADJ, METAL FILM	10K
RV5	1-224-921-11	RES, ADJ, METAL FILM	20K
RV6	1-224-920-00	RES, ADJ, METAL FILM	10K
RV7	1-224-922-00	RES, ADJ, METAL FILM	50K
RV8	1-224-923-00	RES, ADJ, METAL FILM	100K
RV9	1-224-922-00	RES, ADJ, METAL FILM	50K
RV10	1-224-921-11	RES, ADJ, METAL FILM	20K
RV11	1-224-920-00	RES, ADJ, METAL FILM	10K
RV12	1-224-916-00	RES, ADJ, METAL FILM	500
RV13	1-224-917-00	RES, ADJ, METAL FILM	1K
RV14	1-224-939-21	RES, ADJ, METAL FILM	5K
RV15	1-224-922-00	RES, ADJ, METAL FILM	50K
RV16	1-224-921-11	RES, ADJ, METAL FILM	20K
RV17	1-224-916-00	RES, ADJ, METAL FILM	500
RV18	1-224-920-00	RES, ADJ, METAL FILM	10K
RV19	1-224-920-00	RES, ADJ, METAL FILM	10K
RV20	1-224-921-11	RES, ADJ, METAL FILM	20K
RV21	1-224-918-00	RES, ADJ, METAL FILM	2K
RV22	1-224-920-00	RES, ADJ, METAL FILM	10K
RV23	1-224-920-00	RES, ADJ, METAL FILM	10K
RV24	1-224-941-21	RES, ADJ, METAL FILM	20K
RV25	1-224-941-21	RES, ADJ, METAL FILM	20K
RV26	1-224-942-21	RES, ADJ, METAL FILM	50K
RV27	1-224-941-21	RES, ADJ, METAL FILM	20K
RV28	1-224-934-21	RES, ADJ, METAL FILM	100

SWITCH

S1	1-552-898-00	SWITCH, TOGGLE
S2	1-552-898-00	SWITCH, TOGGLE
S3	1-552-898-00	SWITCH, TOGGLE
S4	1-552-898-00	SWITCH, TOGGLE
S5	1-552-898-00	SWITCH, TOGGLE

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

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- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

CAPACITORS
- MF : μF, PF : μμF

RESISTORS
- All resistors are in ohms
- F : nonflammable

COILS
- MMH : mH, UH : μH

- P : BVM-1301P
  PM: BVM-1301PM

Ref.No	Part No	Description			Remark
	♣:A-1347-002-A	V BOARD, COMPLETE (BVM-1301P ONLY) E-305			
	♣:4-335-908-00	WASHER (S), FITTING, CONTROL			
		CAPACTOR			
C1	1-102-518-00	CERAMIC	33PF	5%	50V
C2	1-102-514-00	CERAMIC	22PF	5%	50V
C3	1-123-316-00	ELECT	10MF	20%	16V
C4	1-108-381-00	MYLAR	0.022MF	10%	100V
C5	1-123-319-00	ELECT	47MF	20%	16V
C6	1-108-385-00	MYLAR	0.047MF	10%	100V
C7	1-108-377-00	MYLAR	0.01MF	10%	100V
C8	1-123-319-00	ELECT	47MF	20%	16V
C9	1-101-006-00	CERAMIC	0.047MF		50V
C10	1-102-973-00	CERAMIC	100PF	5%	50V
C11	1-123-319-00	ELECT	47MF	20%	16V
C12	1-101-006-00	CERAMIC	0.047MF		50V
C13	1-102-820-00	CERAMIC	330PF	5%	50V
C14	1-123-319-00	ELECT	47MF	20%	16V
C15	1-101-006-00	CERAMIC	0.047MF		50V
C17	1-123-319-00	ELECT	47MF	20%	16V
C18	1-101-006-00	CERAMIC	0.047MF		50V
C19	1-123-317-00	ELECT	22MF	20%	16V
C20	1-123-351-00	ELECT	0.47MF	20%	50V
C21	1-108-369-00	MYLAR	0.0022MF	10%	100V
C22	1-123-319-00	ELECT	47MF	20%	16V
C23	1-101-006-00	CERAMIC	0.047MF		50V
C24	1-102-824-00	CERAMIC	430PF	5%	50V
C25	1-101-006-00	CERAMIC	0.047MF		50V
C26	1-123-316-00	ELECT	10MF	20%	16V
C27	1-102-978-00	CERAMIC	220PF	5%	50V
C28	1-102-978-00	CERAMIC	220PF	5%	50V
C29	1-101-006-00	CERAMIC	0.047MF		50V
C30	1-123-316-00	ELECT	10MF	20%	16V
C31	1-108-385-00	MYLAR	0.047MF	10%	100V
C32	1-108-365-00	MYLAR	0.001MF	10%	100V
C33	1-102-824-00	CERAMIC	430PF	5%	50V
C34	1-123-316-00	ELECT	10MF	20%	16V
C35	1-101-006-00	CERAMIC	0.047MF		50V
C36	1-102-848-00	CERAMIC	180PF	5%	50V
C37	1-102-848-00	CERAMIC	180PF	5%	50V
C38	1-108-365-00	MYLAR	0.001MF	10%	100V
C39	1-101-006-00	CERAMIC	0.047MF		50V
C40	1-102-973-00	CERAMIC	100PF	5%	50V
C41	1-102-530-00	CERAMIC	120PF	5%	50V
C42	1-123-316-00	ELECT	10MF	20%	16V
C43	1-101-006-00	CERAMIC	0.047MF		50V
C44	1-123-316-00	ELECT	10MF	20%	16V
C45	1-101-006-00	CERAMIC	0.047MF		50V
C46	1-108-377-00	MYLAR	0.01MF	10%	100V
C47	1-102-824-00	CERAMIC	430PF	5%	50V
C48	1-123-316-00	ELECT	10MF	20%	16V
C49	1-108-385-00	MYLAR	0.047MF	10%	100V

Ref.No	Part No	Description			Remark
C50	1-102-848-00	CERAMIC	180PF	5%	50V
C51	1-102-848-00	CERAMIC	180PF	5%	50V
C52	1-102-978-00	CERAMIC	220PF	5%	50V
C53	1-108-365-00	MYLAR	0.001MF	10%	100V
C54	1-123-316-00	ELECT	10MF	20%	16V
C55	1-101-006-00	CERAMIC	0.047MF		50V
C56	1-123-316-00	ELECT	10MF	20%	16V
C57	1-101-006-00	CERAMIC	0.047MF		50V
C58	1-123-316-00	ELECT	10MF	20%	16V
C59	1-101-006-00	CERAMIC	0.047MF		50V
C60	1-123-316-00	ELECT	10MF	20%	16V
C61	1-101-006-00	CERAMIC	0.047MF		50V
C62	1-101-006-00	CERAMIC	0.047MF		50V
C63	1-102-824-00	CERAMIC	430PF	5%	50V
C64	1-102-978-00	CERAMIC	220PF	5%	50V
C65	1-102-978-00	CERAMIC	220PF	5%	50V
C66	1-102-978-00	CERAMIC	220PF	5%	50V
C67	1-102-978-00	CERAMIC	220PF	5%	50V
C68	1-102-978-00	CERAMIC	220PF	5%	50V
C69	1-123-316-00	ELECT	10MF	20%	16V
C70	1-101-006-00	CERAMIC	0.047MF		50V
C71	1-123-316-00	ELECT	10MF	20%	16V
C72	1-101-006-00	CERAMIC	0.047MF		50V
C73	1-123-316-00	ELECT	10MF	20%	16V
C74	1-101-006-00	CERAMIC	0.047MF		50V
C75	1-123-316-00	ELECT	10MF	20%	16V
C76	1-101-006-00	CERAMIC	0.047MF		50V
C77	1-123-320-00	ELECT	100MF	20%	16V
C79	1-123-319-00	ELECT	47MF	20%	16V
C81	1-102-978-00	CERAMIC	220PF	5%	50V
C82	1-102-978-00	CERAMIC	220PF	5%	50V
C83	1-102-978-00	CERAMIC	220PF	5%	50V
		DIODE			
D1	8-719-815-55	DIODE 1S1555			
D2	8-719-815-55	DIODE 1S1555			
D3	8-719-815-55	DIODE 1S1555			
D4	8-719-815-55	DIODE 1S1555			
D5	8-719-815-55	DIODE 1S1555			
D6	8-719-815-55	DIODE 1S1555			
D7	8-719-815-55	DIODE 1S1555			
D8	8-719-815-55	DIODE 1S1555			
D9	8-719-815-55	DIODE 1S1555			
D10	8-719-815-55	DIODE 1S1555			
D11	8-719-815-55	DIODE 1S1555			
D12	8-719-815-55	DIODE 1S1555			
		IC			
IC1	8-759-901-22	IC SN74LS122N			
IC2	8-759-900-04	IC SN74LS04N			
IC3	8-759-900-00	IC SN74LS00N			
IC4	8-759-901-23	IC SN74LS123N			
IC5	8-759-115-55	IC UPC1555C			

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- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

CAPACITORS
- MF : μF, PF : μμF

RESISTORS
- All resistors are in ohms
- F : nonflammable

COILS
- MMH : mH, UH : μH

V(P)

Ref.No	Part No	Description	Remark
IC6	8-759-115-55	IC UPC1555C	
IC7	8-759-115-55	IC UPC1555C	
IC8	8-759-145-58	IC UPC4558C	
IC9	8-759-900-93	IC SN74LS93N	
IC10	8-759-900-93	IC SN74LS93N	
IC11	8-759-900-93	IC SN74LS93N	
IC12	8-759-902-79	IC SN74LS279N	
IC13	8-759-900-00	IC SN74LS00N	
IC14	8-759-900-04	IC SN74LS04N	
IC15	8-759-900-00	IC SN74LS00N	
IC16	8-759-900-00	IC SN74LS00N	
		TRANSISTOR	
Q1	8-724-375-01	TRANSISTOR 2SC403C	
Q2	8-724-375-01	TRANSISTOR 2SC403C	
Q3	8-729-384-48	TRANSISTOR 2SA844	
Q4	8-729-384-48	TRANSISTOR 2SA844	
Q5	8-724-375-01	TRANSISTOR 2SC403C	
Q6	8-724-375-01	TRANSISTOR 2SC403C	
Q7	8-724-375-01	TRANSISTOR 2SC403C	
Q8	8-724-375-01	TRANSISTOR 2SC403C	
Q9	8-724-375-01	TRANSISTOR 2SC403C	
Q10	8-724-375-01	TRANSISTOR 2SC403C	
Q11	8-724-375-01	TRANSISTOR 2SC403C	
Q12	8-729-384-48	TRANSISTOR 2SA844	
Q13	8-729-384-48	TRANSISTOR 2SA844	
Q14	8-729-384-48	TRANSISTOR 2SA844	
Q15	8-724-375-01	TRANSISTOR 2SC403C	
Q16	8-724-375-01	TRANSISTOR 2SC403C	
Q17	8-724-375-01	TRANSISTOR 2SC403C	
Q18	8-724-375-01	TRANSISTOR 2SC403C	
Q19	8-724-375-01	TRANSISTOR 2SC403C	
Q20	8-729-384-48	TRANSISTOR 2SA844	
Q21	8-729-384-48	TRANSISTOR 2SA844	
		RESISTOR	
R1	1-214-149-00	METAL 5.1K 1% 1/4W	
R3	1-246-788-00	CARBON 2.7K 5% 1/8W	
R4	1-246-791-00	CARBON 4.7K 5% 1/8W	
R5	1-246-836-00	CARBON 240 5% 1/8W	
R6	1-246-797-00	CARBON 15K 5% 1/8W	
R7	1-246-783-00	CARBON 1K 5% 1/8W	
R8	1-246-759-00	CARBON 10 5% 1/8W	
R9	1-246-837-00	CARBON 300 5% 1/8W	
R10	1-246-797-00	CARBON 15K 5% 1/8W	
R11	1-246-531-00	CARBON 270K 5% 1/4W	
R12	1-246-783-00	CARBON 1K 5% 1/8W	
R13	1-246-785-00	CARBON 1.5K 5% 1/8W	
R14	1-246-783-00	CARBON 1K 5% 1/8W	
R15	1-246-531-00	CARBON 270K 5% 1/4W	
R16	1-246-795-00	CARBON 10K 5% 1/8W	
R17	1-246-539-00	COMPOSITION 560K 5% 1/4W	

Ref.No	Part No	Description	Remark
R18	1-246-797-00	CARBON 15K 5% 1/8W	
R19	1-246-788-00	CARBON 2.7K 5% 1/8W	
R20	1-246-791-00	CARBON 4.7K 5% 1/8W	
R21	1-246-838-00	CARBON 360 5% 1/8W	
R22	1-246-780-00	CARBON 560 5% 1/8W	
R23	1-246-852-00	CARBON 5.1K 5% 1/8W	
R24	1-246-800-00	CARBON 27K 5% 1/8W	
R25	1-246-865-00	CARBON 62K 5% 1/8W	
R26	1-246-785-00	CARBON 1.5K 5% 1/8W	
R28	1-246-795-00	CARBON 10K 5% 1/8W	
R29	1-246-785-00	CARBON 1.5K 5% 1/8W	
R30	1-246-799-00	CARBON 22K 5% 1/8W	
R31	1-246-783-00	CARBON 1K 5% 1/8W	
R32	1-246-790-00	CARBON 3.9K 5% 1/8W	
R33	1-246-795-00	CARBON 10K 5% 1/8W	
R34	1-246-795-00	CARBON 10K 5% 1/8W	
R35	1-246-798-00	CARBON 18K 5% 1/8W	
R36	1-246-797-00	CARBON 15K 5% 1/8W	
R37	1-246-799-00	CARBON 22K 5% 1/8W	
R38	1-246-797-00	CARBON 15K 5% 1/8W	
R39	1-246-795-00	CARBON 10K 5% 1/8W	
R40	1-246-801-00	CARBON 33K 5% 1/8W	
R41	1-214-179-00	METAL 91K 1% 1/4W	
R42	1-214-179-00	METAL 91K 1% 1/4W	
R43	1-246-771-00	CARBON 100 5% 1/8W	
R44	1-246-795-00	CARBON 10K 5% 1/8W	
R45	1-214-179-00	METAL 91K 1% 1/4W	
R46	1-214-156-00	METAL 10K 1% 1/4W	
R47	1-214-173-00	METAL 51K 1% 1/4W	
R48	1-246-795-00	CARBON 10K 5% 1/8W	
R49	1-214-140-00	METAL 2.2K 1% 1/4W	
R50	1-214-148-00	METAL 4.7K 1% 1/4W	
R51	1-246-795-00	CARBON 10K 5% 1/8W	
R52	1-246-795-00	CARBON 10K 5% 1/8W	
R53	1-246-860-00	CARBON 24K 5% 1/8W	
R54	1-246-793-00	CARBON 6.8K 5% 1/8W	
R55	1-246-797-00	CARBON 15K 5% 1/8W	
R56	1-246-799-00	CARBON 22K 5% 1/8W	
R57	1-246-776-00	CARBON 270 5% 1/8W	
R58	1-214-175-00	METAL 62K 1% 1/4W	
R59	1-246-797-00	CARBON 15K 5% 1/8W	
R60	1-246-799-00	CARBON 22K 5% 1/8W	
R61	1-246-795-00	CARBON 10K 5% 1/8W	
R62	1-246-797-00	CARBON 15K 5% 1/8W	
R63	1-246-799-00	CARBON 22K 5% 1/8W	
R64	1-246-797-00	CARBON 15K 5% 1/8W	
R65	1-246-799-00	CARBON 22K 5% 1/8W	
R66	1-246-797-00	CARBON 15K 5% 1/8W	
R67	1-246-799-00	CARBON 22K 5% 1/8W	
R68	1-246-797-00	CARBON 15K 5% 1/8W	
R69	1-246-799-00	CARBON 22K 5% 1/8W	
R70	1-246-776-00	CARBON 270 5% 1/8W	
R71	1-214-145-00	METAL 3.6K 1% 1/4W	

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

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CAPACITORS
- MF : μF, PF : μμF

RESISTORS
- All resistors are in ohms
- F : nonflammable

COILS
- MMH : mH, UH : μH

Ref.No	Part No	Description				Remark
R72	1-214-148-00	METAL	4.7K	1%	1/4W	
R73	1-214-146-00	METAL	3.9K	1%	1/4W	
R74	1-246-795-00	CARBON	10K	5%	1/8W	
R75	1-246-799-00	CARBON	22K	5%	1/8W	
R76	1-214-149-00	METAL	5.1K	1%	1/4W	
R77	1-246-797-00	CARBON	15K	5%	1/8W	
R78	1-246-798-00	CARBON	18K	5%	1/8W	
R79	1-246-797-00	CARBON	15K	5%	1/8W	
R80	1-246-799-00	CARBON	22K	5%	1/8W	
R81	1-246-798-00	CARBON	18K	5%	1/8W	
R82	1-246-797-00	CARBON	15K	5%	1/8W	
R83	1-246-799-00	CARBON	22K	5%	1/8W	
R84	1-246-797-00	CARBON	15K	5%	1/8W	
R85	1-246-799-00	CARBON	22K	5%	1/8W	
R86	1-246-798-00	CARBON	18K	5%	1/8W	
		VARIABLE RESISTOR				
RV1	1-224-941-21	RES, ADJ, METAL FILM 20K				
RV2	1-224-941-21	RES, ADJ, METAL FILM 20K				
RV3	1-224-940-21	RES, ADJ, METAL FILM 10K				
		CONNECTOR				
V1	♦:1-508-743-00	PIN, CONNECTOR 5P				
V2	♦:1-508-797-31	PIN, CONNECTOR 4P				
V3	♦:1-508-797-00	PIN, CONNECTOR 4P				
V4	♦:1-508-845-00	PIN, CONNECTOR 6P				
V5	♦:1-508-846-00	PIN, CONNECTOR 8P				

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♦:A-1347-001-A V BOARD, COMPLETE (BVM-1301PM ONLY)E-305

♦:4-335-908-00 WASHER (S), FITTING, CONTROL

CAPACITOR

C1	1-102-518-00	CERAMIC	33PF	5%	50V
C2	1-102-514-00	CERAMIC	22PF	5%	50V
C3	1-123-356-00	ELECT	10MF	20%	16V
C4	1-108-381-00	MYLAR	0.022MF	10%	100V
C5	1-123-319-00	ELECT	47MF	20%	16V
C6	1-108-385-00	MYLAR	0.047MF	10%	100V
C7	1-108-377-00	MYLAR	0.01MF	10%	100V
C8	1-123-319-00	ELECT	47MF	20%	16V
C9	1-101-006-00	CERAMIC	0.047MF		50V
C10	1-102-973-00	CERAMIC	100PF	5%	50V
C11	1-123-332-00	ELECT	47MF		16V
C12	1-101-006-00	CERAMIC	0.047MF		50V
C13	1-102-820-00	CERAMIC	330PF	5%	50V
C14	1-123-319-00	ELECT	47MF	20%	16V
C15	1-101-006-00	CERAMIC	0.047MF		50V
C17	1-123-319-00	ELECT	47MF	20%	16V
C18	1-101-006-00	CERAMIC	0.047MF		50V
C19	1-123-317-00	ELECT	22MF	20%	16V
C20	1-123-351-00	ELECT	0.47MF	20%	50V
C21	1-108-369-00	MYLAR	0.0022MF	10%	100V

Ref.No	Part No	Description			Remark
C22	1-123-319-00	ELECT	47MF	20%	16V
C23	1-101-006-00	CERAMIC	0.047MF		50V
C24	1-102-824-00	CERAMIC	430PF	5%	50V
C25	1-101-006-00	CERAMIC	0.047MF		50V
C26	1-123-316-00	ELECT	10MF	20%	16V
C27	1-102-978-00	CERAMIC	220PF	5%	50V
C28	1-102-978-00	CERAMIC	220PF	5%	50V
C29	1-101-006-00	CERAMIC	0.047MF		50V
C30	1-123-356-00	ELECT	10MF	20%	16V
C31	1-108-385-00	MYLAR	0.047MF	10%	100V
C32	1-108-365-00	MYLAR	0.001MF	10%	100V
C33	1-102-824-00	CERAMIC	430PF	5%	50V
C34	1-123-356-00	ELECT	10MF	20%	16V
C35	1-101-006-00	CERAMIC	0.047MF		50V
C36	1-102-848-00	CERAMIC	180PF	5%	50V
C37	1-102-848-00	CERAMIC	180PF	5%	50V
C38	1-108-365-00	MYLAR	0.001MF	10%	100V
C39	1-101-006-00	CERAMIC	0.047MF		50V
C40	1-102-973-00	CERAMIC	100PF	5%	50V
C41	1-102-530-00	CERAMIC	120PF	5%	50V
C42	1-123-356-00	ELECT	10MF	20%	16V
C43	1-101-006-00	CERAMIC	0.047MF		50V
C44	1-123-356-00	ELECT	10MF	20%	16V
C45	1-101-006-00	CERAMIC	0.047MF		50V
C46	1-108-377-00	MYLAR	0.01MF	10%	100V
C47	1-102-824-00	CERAMIC	430PF	5%	50V
C48	1-123-356-00	ELECT	10MF	20%	16V
C49	1-108-385-00	MYLAR	0.047MF	10%	100V
C50	1-102-848-00	CERAMIC	180PF	5%	50V
C51	1-102-848-00	CERAMIC	180PF	5%	50V
C52	1-102-978-00	CERAMIC	220PF	5%	50V
C53	1-108-365-00	MYLAR	0.001MF	10%	100V
C54	1-123-356-00	ELECT	10MF	20%	16V
C55	1-101-006-00	CERAMIC	0.047MF		50V
C56	1-123-356-00	ELECT	10MF	20%	16V
C57	1-101-006-00	CERAMIC	0.047MF		50V
C58	1-123-356-00	ELECT	10MF	20%	16V
C59	1-101-006-00	CERAMIC	0.047MF		50V
C60	1-123-356-00	ELECT	10MF	20%	16V
C61	1-101-006-00	CERAMIC	0.047MF		50V
C62	1-101-006-00	CERAMIC	0.047MF		50V
C63	1-102-824-00	CERAMIC	430PF	5%	50V
C64	1-102-978-00	CERAMIC	220PF	5%	50V
C65	1-102-978-00	CERAMIC	220PF	5%	50V
C66	1-102-978-00	CERAMIC	220PF	5%	50V
C67	1-102-978-00	CERAMIC	220PF	5%	50V
C68	1-102-978-00	CERAMIC	220PF	5%	50V
C69	1-123-356-00	ELECT	10MF	20%	16V
C70	1-101-006-00	CERAMIC	0.047MF		50V
C71	1-123-356-00	ELECT	10MF	20%	16V
C72	1-101-006-00	CERAMIC	0.047MF		50V
C73	1-123-356-00	ELECT	10MF	20%	16V
C74	1-101-006-00	CERAMIC	0.047MF		50V

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RESISTORS
- All resistors are in ohms
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COILS
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V(PM)

Ref.No	Part No	Description			Remark
C75	1-123-356-00	ELECT	10MF	20%	16V
C76	1-101-006-00	CERAMIC	0.047MF		50V
C77	1-123-333-00	ELECT	100MF	20%	16V
C79	1-123-319-00	ELECT	47MF	20%	16V
C81	1-102-978-00	CERAMIC	220PF	5%	50V
C82	1-102-978-00	CERAMIC	220PF	5%	50V
C83	1-102-978-00	CERAMIC	220PF	5%	50V
C84	1-102-888-00	CERAMIC	150PF	5%	50V
		DIODE			
D1	8-719-815-55	DIODE 1S1555			
D2	8-719-815-55	DIODE 1S1555			
D3	8-719-815-55	DIODE 1S1555			
D4	8-719-815-55	DIODE 1S1555			
D5	8-719-815-55	DIODE 1S1555			
D6	8-719-815-55	DIODE 1S1555			
D7	8-719-815-55	DIODE 1S1555			
D8	8-719-815-55	DIODE 1S1555			
D9	8-719-815-55	DIODE 1S1555			
D10	8-719-815-55	DIODE 1S1555			
D11	8-719-815-55	DIODE 1S1555			
D12	8-719-815-55	DIODE 1S1555			
		IC			
IC1	8-759-901-22	IC SN74LS122N			
IC2	8-759-900-04	IC SN74LS04N			
IC3	8-759-900-00	IC SN74LS00N			
IC4	8-759-901-23	IC SN74LS123N			
IC5	8-759-115-55	IC UPC1555C			
IC6	8-759-115-55	IC UPC1555C			
IC7	8-759-115-55	IC UPC1555C			
IC8	8-759-145-58	IC UPC4558C			
IC9	8-759-900-93	IC SN74LS93N			
IC10	8-759-900-93	IC SN74LS93N			
IC11	8-759-900-93	IC SN74LS93N			
IC12	8-759-902-79	IC SN74LS279N			
IC13	8-759-900-00	IC SN74LS00N			
IC14	8-759-900-04	IC SN74LS04N			
IC15	8-759-900-00	IC SN74LS00N			
		TRANSISTOR			
Q1	8-724-373-01	TRANSISTOR 2SC403C			
Q2	8-724-374-01	TRANSISTOR 2SC403C			
Q3	8-729-384-48	TRANSISTOR 2SA844C			
Q4	8-729-384-48	TRANSISTOR 2SA844C			
Q5	8-724-374-01	TRANSISTOR 2SC403C			
Q6	8-724-374-01	TRANSISTOR 2SC403C			
Q7	8-724-373-01	TRANSISTOR 2SC403C			
Q8	8-724-373-01	TRANSISTOR 2SC403C			
Q9	8-724-374-01	TRANSISTOR 2SC403C			
Q10	8-724-374-01	TRANSISTOR 2SC403C			
Q11	8-724-374-01	TRANSISTOR 2SC403C			
Q12	8-729-384-48	TRANSISTOR 2SA844C			

Ref.No	Part No	Description			Remark
Q13	8-729-384-48	TRANSISTOR 2SA844C			
Q14	8-729-384-48	TRANSISTOR 2SA844C			
Q15	8-724-374-01	TRANSISTOR 2SC403C			
Q16	8-724-374-01	TRANSISTOR 2SC403C			
Q17	8-724-374-01	TRANSISTOR 2SC403C			
Q18	8-724-374-01	TRANSISTOR 2SC403C			
Q19	8-724-373-01	TRANSISTOR 2SC403C			
Q20	8-729-384-48	TRANSISTOR 2SA844C			
Q21	8-729-384-48	TRANSISTOR 2SA844C			
		RESISTOR			
R1	1-214-149-00	METAL	5.1K	1%	1/4W
R3	1-246-788-00	CARBON	2.7K	5%	1/8W
R4	1-246-791-00	CARBON	4.7K	5%	1/8W
R5	1-246-836-00	CARBON	240K	5%	1/8W
R6	1-246-797-00	CARBON	15K	5%	1/8W
R7	1-246-783-00	CARBON	1K	5%	1/8W
R8	1-246-759-00	CARBON	10	5%	1/8W
R9	1-246-837-00	CARBON	300	5%	1/8W
R10	1-246-797-00	CARBON	15K	5%	1/8W
R11	1-246-531-00	CARBON	270K	5%	1/4W
R12	1-246-783-00	CARBON	1K	5%	1/8W
R13	1-246-785-00	CARBON	1.5K	5%	1/8W
R14	1-246-783-00	CARBON	1K	5%	1/8W
R15	1-246-531-00	CARBON	270K	5%	1/4W
R16	1-246-759-00	CARBON	10	5%	1/8W
R17	1-246-539-00	COMPOSITION	560K	5%	1/4W
R18	1-246-797-00	CARBON	15K	5%	1/8W
R19	1-246-788-00	CARBON	2.7K	5%	1/8W
R20	1-246-791-00	CARBON	4.7K	5%	1/8W
R21	1-246-838-00	CARBON	360	5%	1/8W
R22	1-246-780-00	CARBON	560	5%	1/8W
R23	1-246-852-00	CARBON	5.1K	5%	1/8W
R24	1-246-800-00	CARBON	27K	5%	1/8W
R25	1-246-865-00	CARBON	62K	5%	1/8W
R26	1-246-785-00	CARBON	1.5K	5%	1/8W
R27	1-246-788-00	CARBON	2.7K	5%	1/8W
R28	1-246-795-00	CARBON	10K	5%	1/8W
R29	1-246-785-00	CARBON	1.5K	5%	1/8W
R30	1-246-799-00	CARBON	22K	5%	1/8W
R31	1-246-783-00	CARBON	1K	5%	1/8W
R32	1-246-790-00	CARBON	3.9K	5%	1/8W
R33	1-246-795-00	CARBON	10K	5%	1/8W
R34	1-246-795-00	CARBON	10K	5%	1/8W
R35	1-246-798-00	CARBON	18K	5%	1/8W
R36	1-246-797-00	CARBON	15K	5%	1/8W
R37	1-246-799-00	CARBON	22K	5%	1/8W
R38	1-246-797-00	CARBON	15K	5%	1/8W
R39	1-246-795-00	CARBON	10K	5%	1/8W
R40	1-246-801-00	CARBON	33K	5%	1/8W
R41	1-246-867-00	CARBON	91K	5%	1/8W
R42	1-214-179-00	METAL	91K	1%	1/4W
R43	1-246-771-00	CARBON	100	5%	1/8W

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Ref.No	Part No	Description				Remark
R44	1-246-795-00	CARBON	10K	5%	1/8W	
R45	1-214-179-00	METAL	91K	1%	1/4W	
R46	1-214-156-00	METAL	10K	1%	1/4W	
R47	1-214-173-00	METAL	51K	1%	1/4W	
R48	1-246-795-00	CARBON	10K	5%	1/8W	
R49	1-214-140-00	METAL	2.2K	1%	1/4W	
R50	1-214-148-00	METAL	4.7K	1%	1/4W	
R51	1-246-795-00	CARBON	10K	5%	1/8W	
R52	1-246-795-00	CARBON	10K	5%	1/8W	
R53	1-246-860-00	CARBON	24K	5%	1/8W	
R54	1-246-793-00	CARBON	6.8K	5%	1/8W	
R55	1-246-797-00	CARBON	15K	5%	1/8W	
R56	1-246-799-00	CARBON	22K	5%	1/8W	
R57	1-246-776-00	CARBON	270	5%	1/8W	
R58	1-214-175-00	METAL	62K	1%	1/4W	
R59	1-246-797-00	CARBON	15K	5%	1/8W	
R60	1-246-799-00	CARBON	22K	5%	1/8W	
R61	1-246-795-00	CARBON	10K	5%	1/8W	
R62	1-246-797-00	CARBON	15K	5%	1/8W	
R63	1-246-799-00	CARBON	22K	5%	1/8W	
R64	1-246-797-00	CARBON	15K	5%	1/8W	
R65	1-246-799-00	CARBON	22K	5%	1/8W	
R66	1-246-797-00	CARBON	15K	5%	1/8W	
R67	1-246-799-00	CARBON	22K	5%	1/8W	
R68	1-246-797-00	CARBON	15K	5%	1/8W	
R69	1-246-799-00	CARBON	22K	5%	1/8W	
R70	1-246-776-00	CARBON	270	5%	1/8W	
R71	1-214-145-00	METAL	3.6K	1%	1/4W	
R72	1-214-148-00	METAL	4.7K	1%	1/4W	
R73	1-214-146-00	METAL	3.9K	1%	1/4W	
R74	1-246-795-00	CARBON	10K	5%	1/8W	
R75	1-246-799-00	CARBON	22K	5%	1/8W	
R76	1-214-149-00	METAL	5.1K	1%	1/4W	
R77	1-246-797-00	CARBON	15K	5%	1/8W	
R78	1-246-798-00	CARBON	18K	5%	1/8W	
R79	1-246-797-00	CARBON	15K	5%	1/8W	
R80	1-246-799-00	CARBON	22K	5%	1/8W	
R81	1-246-798-00	CARBON	18K	5%	1/8W	
R82	1-246-797-00	CARBON	15K	5%	1/8W	
R83	1-246-799-00	CARBON	22K	5%	1/8W	
R84	1-246-797-00	CARBON	15K	5%	1/8W	
R85	1-246-799-00	CARBON	22K	5%	1/8W	
R86	1-246-798-00	CARBON	18K	5%	1/8W	

VARIABLE RESISTOR

RV1	1-224-941-00	RES, ADJ, METAL FILM	20K
RV2	1-224-941-00	RES, ADJ, METAL FILM	20K
RV3	1-224-940-00	RES, ADJ, METAL FILM	10K

CONNECTOR

V1	1-508-743-00	PIN, CONNECTOR 5P
V2	1-508-797-31	PIN, CONNECTOR 4P
V3	1-508-797-00	PIN, CONNECTOR 4P
V4	1-508-845-00	PIN, CONNECTOR 6P
V5	1-508-846-00	PIN, CONNECTOR 8P

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♣:1-600-356-00 HA BOARD E-156

CAPACITOR

C1	1-101-006-00	CERAMIC	0.047MF	50V
C2	1-101-006-00	CERAMIC	0.047MF	50V
C3	1-101-006-00	CERAMIC	0.047MF	50V
C4	1-101-006-00	CERAMIC	0.047MF	50V

CONNECTOR

HA1	♣:1-508-744-00	PIN, CONNECTOR	10P
HA2	♣:1-508-744-00	PIN, CONNECTOR	10P
HA3	♣:1-508-797-00	PIN, CONNECTOR	4P
HA4	♣:1-508-796-11	PIN, CONNECTOR	2P
HA5	♣:1-508-796-11	PIN, CONNECTOR	2P

RESISTOR

R1	1-214-174-00	METAL	56K	1%	1/4W
R2	1-214-156-00	METAL	10K	1%	1/4W
R3	1-214-178-00	METAL	82K	1%	1/4W
R4	1-214-180-00	METAL	100K	1%	1/4W
R5	1-214-180-00	METAL	100K	1%	1/4W
R6	1-214-172-00	METAL	47K	1%	1/4W
R7	1-214-180-00	METAL	100K	1%	1/4W
R8	1-214-172-00	METAL	47K	1%	1/4W
R9	1-214-180-00	METAL	100K	1%	1/4W
R10	1-214-173-00	METAL	51K	1%	1/4W

VARIABLE RESISTOR

RV1	1-226-545-00	RES, VAR WITH SWITCH	10K
RV2	1-226-546-00	RES, VAR WITH SWITCH	20K
RV3	1-226-546-00	RES, VAR WITH SWITCH	20K
RV4	1-226-546-00	RES, VAR WITH SWITCH	20K
RV5	1-226-546-00	RES, VAR WITH SWITCH	20K

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♣:1-600-357-00 HB BOARD E-155

CAPACITOR

C1	1-101-004-00	CERAMIC	0.01MF	50V
C2	1-101-004-00	CERAMIC	0.01MF	50V
C3	1-101-004-00	CERAMIC	0.01MF	50V

CONNECTOR

HB1	♣:1-508-736-00	CONNECTOR PIN

VARIABLE RESISTOR

RV1	1-226-547-00	RES, VAR, CARBON	10K
RV2	1-224-796-00	RES, VAR, CARBON	20K
RV3	1-224-796-00	RES, VAR, CARBON	20K

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- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

CAPACITORS
- MF : μF, PF : μμF

RESISTORS
- All resistors are in ohms
- F : nonflammable

COILS
- MMH : mH, UH : μH

HB JB JC JA YA YB XA XB

Ref.No	Part No	Description	Remark
RV4	1-224-796-00	RES, VAR, CARBON 20K	
**********			
	♦:1-600-347-00	JB BOARD	E-210
		CONNECTOR	
JB1	♦:1-508-846-00	PIN, CONNECTOR 8P	
		SWITCH	
S1	1-552-897-00	SWITCH, LEVER	
S2	1-552-897-00	SWITCH, LEVER	
S3	1-552-897-00	SWITCH, LEVER	
**********			
	♦:1-604-144-00	JC BOARD	E-208
		CONNECTOR	
JC1	♦:1-508-742-00	PIN, CONNECTOR 3P	
JC2	♦:1-508-742-00	PIN, CONNECTOR 3P	
JC3	♦:1-508-742-00	PIN, CONNECTOR 3P	
JC4	♦:1-508-742-00	PIN, CONNECTOR 3P	
		SWITCH	
S1	1-552-897-00	SWITCH, LEVER	
S2	1-552-897-00	SWITCH, LEVER	
S3	1-552-897-00	SWITCH, LEVER	
**********			
	♦:1-600-358-00	JA BOARD	E-154
		CONNECTOR	
JA1	♦:1-508-845-00	PIN, CONNECTOR 6P	
		SWITCH	
S1	1-552-897-00	SWITCH, LEVER	
S2	1-552-897-00	SWITCH, LEVER	
S3	1-553-582-00	SWITCH, LEVER SLIDE	
**********			
	♦:1-600-359-00	YA BOARD	E-157
		DIODE	
D1	8-719-900-92	DIODE GL-9PR20	
		CONNECTOR	
HA4	♦:1-561-049-00	CONNECTOR 2P	

Ref.No	Part No	Description	Remark
	♦:1-600-360-00	YB BOARD	E-151
		DIODE	
D1	8-719-909-20	DIODE GL-9NG2	
		CONNECTOR	
HA5	♦:1-551-808-00	CONNECTOR 2P	
**********			
	♦:1-600-349-00	XA BOARD	E-201
		DIODE	
LED1	=>8-719-803-07	DIODE TLR306	
**********			
	♦:1-600-350-00	XB BOARD	E-202
		CAPACITOR	
C1	1-101-006-00	CERAMIC 0.047MF	50V
C2	1-123-316-00	ELECT 10MF 20%	16V
		IC	
IC1	8-759-900-47	IC SN74LS47N	
		RESISTOR	
R1	1-246-780-00	CARBON 560 5%	1/8W
R2	1-246-780-00	CARBON 560 5%	1/8W
R3	1-246-780-00	CARBON 560 5%	1/8W
R4	1-246-780-00	CARBON 560 5%	1/8W
R5	1-246-780-00	CARBON 560 5%	1/8W
R6	1-246-780-00	CARBON 560 5%	1/8W
R7	1-246-780-00	CARBON 560 5%	1/8W
R8	1-246-795-00	CARBON 10K 5%	1/8W
R9	1-246-795-00	CARBON 10K 5%	1/8W
R10	1-246-795-00	CARBON 10K 5%	1/8W
R11	1-246-795-00	CARBON 10K 5%	1/8W
R12	1-246-782-00	CARBON 820 5%	1/8W
R14	1-246-791-00	CARBON 4.7K 5%	1/8W
		SWITCH	
S1	1-552-898-00	SWITCH, TOGGLE	
S2	1-552-102-51	SWITCH, DEGITAL	
		CONNECTOR	
X1	♦:1-508-796-21	PIN, CONNECTOR 2P	
X2	♦:1-508-796-11	PIN, CONNECTOR 2P	

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CAPACITORS
- MF : μF, PF : μμF

RESISTORS
- All resistors are in ohms
- F : nonflammable

COILS
- MMH : mH, UH : μH

Ref.No	Part No	Description				Remark
	♣:A-1389-246-A	U BOARD				E-307
	♣:4-335-908-00	WASHER (S), FITTING, CONTROL				
		CAPACITOR				
C1	1-102-848-00	CERAMIC	180PF	5%	50V	
C2	1-102-848-00	CERAMIC	180PF	5%	50V	
C3	1-123-352-00	ELECT	1MF	20%	50V	
C4	1-123-319-00	ELECT	47MF	20%	16V	
C5	1-102-848-00	CERAMIC	180PF	5%	50V	
C6	1-108-389-00	MYLAR	0.1MF	10%	100V	
C7	1-108-389-00	MYLAR	0.1MF	10%	100V	
C8	1-123-319-00	ELECT	47MF	20%	16V	
C10	1-102-978-00	CERAMIC	220PF	5%	50V	
C11	1-102-978-00	CERAMIC	220PF	5%	50V	
C12	1-101-004-00	CERAMIC	0.01MF		50V	
C13	1-102-824-00	CERAMIC	430PF	5%	50V	
C14	1-102-824-00	CERAMIC	430PF	5%	50V	
C15	1-123-352-00	ELECT	1MF	20%	50V	
C16	1-123-316-00	ELECT	10MF	20%	16V	
C17	1-101-004-00	CERAMIC	0.01MF		50V	
C18	1-102-518-00	CERAMIC	33PF	5%	50V	
C19	1-102-518-00	CERAMIC	33PF	5%	50V	
C20	1-102-824-00	CERAMIC	430PF	5%	50V	
C21	1-123-320-00	ELECT	100MF	20%	16V	
C22	1-123-319-00	ELECT	47MF	20%	16V	
C23	1-123-319-00	ELECT	47MF	20%	16V	
C24	1-123-319-00	ELECT	47MF	20%	16V	
C25	1-123-319-00	ELECT	47MF	20%	16V	
C26	1-123-320-00	ELECT	100MF	20%	16V	
C27	1-123-320-00	ELECT	100MF	20%	16V	
C28	1-123-320-00	ELECT	100MF	20%	16V	
C29	1-123-320-00	ELECT	100MF	20%	16V	
C30	1-123-319-00	ELECT	47MF	20%	16V	
C31	1-102-978-00	CERAMIC	220PF	5%	50V	
C32	1-102-848-00	CERAMIC	180PF	5%	50V	
C33	1-102-978-00	CERAMIC	220PF	5%	50V	
C34	1-102-978-00	CERAMIC	220PF	5%	50V	
C35	1-102-892-00	CERAMIC	22PF	5%	50V	
		DIODE				
D1	8-719-815-55	DIODE 1S1555				
D3	8-719-815-55	DIODE 1S1555				
D7	8-719-815-55	DIODE 1S1555				
		IC				
IC1	8-759-900-00	IC SN74LS00N				
IC2	8-759-900-73	IC SN74LS73AN				
IC3	8-759-900-93	IC SN74LS93N				
IC4	8-759-900-00	IC SN74LS00N				
IC5	8-759-900-00	IC SN74LS00N				
IC6	8-759-900-00	IC SN74LS00N				
IC7	8-759-901-23	IC SN74LS123N				

Ref.No	Part No	Description			Remark
		COIL			
L1	1-407-578-00	COIL, VARIABLE			
L2	1-407-573-00	COIL, VARIABLE 47MH			
		TRANSISTOR			
Q1	8-729-384-48	TRANSISTOR 2SA844			
Q2	8-724-375-01	TRANSISTOR 2SC403C			
Q3	8-724-375-01	TRANSISTOR 2SC403C			
Q4	8-729-384-48	TRANSISTOR 2SA844			
Q5	8-724-375-01	TRANSISTOR 2SC403C			
Q6	8-729-384-48	TRANSISTOR 2SA844			
Q7	8-724-375-01	TRANSISTOR 2SC403C			
Q8	8-724-375-01	TRANSISTOR 2SC403C			
Q9	8-729-384-48	TRANSISTOR 2SA844			
		RESISTOR			
R1	1-246-848-00	CARBON	2.4K	5% 1/8W	
R2	1-246-791-00	CARBON	4.7K	5% 1/8W	
R3	1-214-150-00	METAL	5.6K	1% 1/4W	
R4	1-214-136-00	METAL	1.5K	1% 1/4W	
R5	1-246-783-00	CARBON	1K	5% 1/8W	
R6	1-246-796-00	CARBON	12K	5% 1/8W	
R7	1-214-174-00	METAL	56K	1% 1/4W	
R8	1-214-134-00	METAL	1.2K	1% 1/4W	
R9	1-246-767-00	CARBON	47	5% 1/8W	
R10	1-214-164-00	METAL	22K	1% 1/4W	
R11	1-246-787-00	CARBON	2.2K	5% 1/8W	
R12	1-246-767-00	CARBON	47	5% 1/8W	
R13	1-246-797-00	CARBON	15K	5% 1/8W	
R14	1-246-767-00	CARBON	47	5% 1/8W	
R15	1-246-788-00	CARBON	2.7K	5% 1/8W	
R16	1-246-791-00	CARBON	4.7K	5% 1/8W	
R17	1-246-787-00	CARBON	2.2K	5% 1/8W	
R18	1-246-795-00	CARBON	10K	5% 1/8W	
R21	1-246-797-00	CARBON	15K	5% 1/8W	
R22	1-246-799-00	CARBON	22K	5% 1/8W	
R23	1-246-797-00	CARBON	15K	5% 1/8W	
R24	1-246-799-00	CARBON	22K	5% 1/8W	
R25	1-246-776-00	CARBON	270	5% 1/8W	
R26	1-246-783-00	CARBON	1K	5% 1/8W	
R27	1-246-783-00	CARBON	1K	5% 1/8W	
R28	1-246-787-00	CARBON	2.2K	5% 1/8W	
R29	1-247-049-00	CARBON	470K	5% 1/8W	
R30	1-246-777-00	CARBON	330	5% 1/8W	
R31	1-246-795-00	CARBON	10K	5% 1/8W	
R32	1-246-780-00	CARBON	560	5% 1/8W	
R33	1-246-783-00	CARBON	1K	5% 1/8W	
R34	1-246-841-00	CARBON	620	5% 1/8W	
R35	1-246-789-00	CARBON	3.3K	5% 1/8W	
R36	1-246-778-00	CARBON	390	5% 1/8W	
R37	1-246-791-00	CARBON	4.7K	5% 1/8W	
R38	1-246-776-00	CARBON	270	5% 1/8W	

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CAPACITORS
- MF : μF, PF : μμF

RESISTORS
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COILS
- MMH : mH, UH : μH

Ref.No	Part No	Description				Remark
R39	1-246-791-00	CARBON	4.7K	5%	1/8W	
R40	1-246-795-00	CARBON	10K	5%	1/8W	
R41	1-246-791-00	CARBON	4.7K	5%	1/8W	
R43	1-214-177-00	METAL	75K	1%	1/4W	
R44	1-246-795-00	CARBON	10K	5%	1/8W	
R45	1-246-795-00	CARBON	10K	5%	1/8W	
R46	1-214-149-00	METAL	5.1K	1%	1/4W	
		VARIABLE RESISTOR				
RV1	1-224-940-21	RES, ADJ, METAL FILM 10K				
RV2	1-224-940-21	RES, ADJ, METAL FILM 10K				
RV3	1-224-942-21	RES, ADJ, METAL FILM 50K				
		CONNECTOR				
U1	♣:1-508-848-00	PIN, CONNECTOR 6P				
U2	♣:1-508-847-00	PIN, CONNECTOR 4P				

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♣:1-604-142-00 T BOARD E-256

CAPACITOR

C1	1-101-006-00	CERAMIC	0.047MF		50V
C2	1-101-006-00	CERAMIC	0.047MF		50V
C3	1-101-006-00	CERAMIC	0.047MF		50V
C4	1-101-006-00	CERAMIC	0.047MF		50V
C5	1-101-006-00	CERAMIC	0.047MF		50V
C6	1-101-006-00	CERAMIC	0.047MF		50V
C7	1-101-006-00	CERAMIC	0.047MF		50V
C8	1-101-006-00	CERAMIC	0.047MF		50V
C10	1-101-006-00	CERAMIC	0.047MF		50V

DIODE

D1	8-719-815-55	DIODE 1S1555

IC

IC1	8-759-901-57	IC SN74LS157N

RESISTOR

R1	1-246-795-00	CARBON	10K	5%	1/8W
R2	1-246-795-00	CARBON	10K	5%	1/8W
R3	1-246-795-00	CARBON	10K	5%	1/8W
R4	1-246-795-00	CARBON	10K	5%	1/8W
R5	1-246-795-00	CARBON	10K	5%	1/8W
R6	1-246-795-00	CARBON	10K	5%	1/8W
R7	1-246-795-00	CARBON	10K	5%	1/8W
R8	1-246-795-00	CARBON	10K	5%	1/8W
R9	1-246-783-00	CARBON	1K	5%	1/8W
R10	1-214-134-00	METAL	1.2K	1%	1/4W
R11	1-246-771-00	CARBON	100	5%	1/8W
R12	1-246-771-00	CARBON	100	5%	1/8W
R13	1-246-771-00	CARBON	100	5%	1/8W
R14	1-246-771-00	CARBON	100	5%	1/8W
R15	1-246-771-00	CARBON	100	5%	1/8W
R16	1-246-771-00	CARBON	100	5%	1/8W
R17	1-246-771-00	CARBON	100	5%	1/8W
R18	1-246-771-00	CARBON	100	5%	1/8W
R19	1-246-771-00	CARBON	100	5%	1/8W
R20	1-246-795-00	CARBON	10K	5%	1/8W

CONNECTOR

T1	♣:1-508-797-31	PIN, CONNECTOR 4P
T2	♣:1-508-797-00	PIN, CONNECTOR 4P
T3	♣:1-508-796-11	PIN, CONNECTOR 2P
T4	♣:1-508-796-11	PIN, CONNECTOR 2P
T5	♣:1-508-846-00	PIN, CONNECTOR 8P
T6	♣:1-508-796-11	PIN, CONNECTOR 2P
T7	♣:1-508-796-21	PIN, CONNECTOR 2P
T8	♣:1-508-846-00	PIN, CONNECTOR 8P
T9	♣:1-508-742-00	PIN, CONNECTOR 3P
T10	♣:1-508-796-11	PIN, CONNECTOR 2P
T11	♣:1-508-796-21	PIN, CONNECTOR 2P
T12	♣:1-508-796-11	PIN, CONNECTOR 2P
T13	♣:1-508-845-00	PIN, CONNECTOR 6P
T14	♣:1-508-797-00	PIN, CONNECTOR 4P
T15	♣:1-508-744-00	PIN, CONNECTOR 10P
T16	♣:1-508-742-00	PIN, CONNECTOR 3P
T17	♣:1-508-797-00	PIN, CONNECTOR 4P
T18	♣:1-508-845-00	PIN, CONNECTOR 6P
T19	♣:1-508-797-00	PIN, CONNECTOR 4P
T20	♣:1-508-846-00	PIN, CONNECTOR 8P
T21	♣:1-508-796-11	PIN, CONNECTOR 2P
T22	♣:1-508-797-31	PIN, CONNECTOR 4P
T23	♣:1-508-796-11	PIN, CONNECTOR 2P
T24	♣:1-561-337-00	CONNECTOR, MULTI
T25	♣:1-561-337-00	CONNECTOR, MULTI
T26	♣:1-561-337-00	CONNECTOR, MULTI
T27	♣:1-561-337-00	CONNECTOR, MULTI
T28	♣:1-561-337-00	CONNECTOR, MULTI
T29	♣:1-561-337-00	CONNECTOR, MULTI
T30	♣:1-508-796-21	PIN, CONNECTOR 2P

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♣:1-600-345-00 W BOARD E-351

CAPACITOR

C10	1-102-851-00	CAP, CERAMIC 15PF
C11	1-102-851-00	CAP, CERAMIC 15PF
C12	1-102-851-00	CAP, CERAMIC 15PF
C13	1-102-851-00	CAP, CERAMIC 15PF
C14	1-102-851-00	CAP, CERAMIC 15PF
C15	1-102-851-00	CAP, CERAMIC 15PF

CONNECTOR

CNJ1	♣:1-509-131-11	CONNECTOR, BNC

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- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

CAPACITORS
- MF : μF, PF : μμF

RESISTORS
- All resistors are in ohms
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COILS
- MMH : mH, UH : μH

Ref.No	Part No	Description	Remark
CNJ2	♦:1-509-131-11	CONNECTOR, BNC	
CNJ3	♦:1-509-131-11	CONNECTOR, BNC	
CNJ4	♦:1-509-131-11	CONNECTOR, BNC	
CNJ5	♦:1-509-131-11	CONNECTOR, BNC	
CNJ6	♦:1-509-131-11	CONNECTOR, BNC	
CNJ7	♦:1-509-131-11	CONNECTOR, BNC	
CNJ8	♦:1-509-131-11	CONNECTOR, BNC	
CNJ9	♦:1-509-131-11	CONNECTOR, BNC	
CNJ10	♦:1-509-131-11	CONNECTOR, BNC	
CNJ11	♦:1-509-131-11	CONNECTOR, BNC	
CNJ12	♦:1-509-131-11	CONNECTOR, BNC	

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MISCELLANEOUS

	1-452-032-00	MAGNET, DISK; 10mm ø	E-53
	1-452-094-00	MAGNET, ROTATABLE DISK; 15mm ø	E-54
	1-452-146-00	MAGNET, BMC	E-51
	⚠1-453-081-00	HIGH VOLTAGE BLOCK, DG	E-207
	1-509-437-00	POWER TRANSISTOR SOCKET	E-205
	♦:1-509-814-41	CONNECTOR ASSY 3P	
	♦:1-551-620-00	CONNECTOR ASSY, MINIATURE 4P	
	♦:1-551-727-00	CONNECTOR 8P	
	♦:1-551-728-41	CONNECTOR 4P	
	♦:1-551-790-21	CONNECTOR ASSY 2P	
	♦:1-551-809-00	CONNECTOR 2P	
	♦:1-551-810-00	CONNECTOR 2P	
	1-533-148-00	HOLDER, FUSE	E-302
	♦:1-551-811-00	CONNECTOR 6P	
	♦:1-551-813-00	CONNECTOR 10P	
	♦:1-551-844-00	CONNECTOR ASSY, MINIATURE 3P	
	♦:1-551-973-00	CONNECTOR 6P	
	♦:1-932-141-12	HARNESS (D BLOCK)	
	♦:1-932-142-11	HARNESS (E ASSY)	
	♦:1-932-146-12	HARNESS	
C901	1-102-050-00	CAP, CERAMIC 0.01 500V	
C902	1-102-050-00	CAP, CERAMIC 0.01 500V	
C903	1-102-050-00	CAP, CERAMIC 0.01 500V	
C904	1-102-050-00	CAP, CERAMIC 0.01 500V	
C905	1-102-050-00	CAP, CERAMIC 0.01 500V	
C906	1-102-050-00	CAP, CERAMIC 0.01 500V	
C907	1-102-249-00	CAP, CERAMIC 680PF 2KV	
C908	1-130-031-00	CAP, POLYPROPYLENE 0.22MF 400V	
CNJ13	1-509-131-11	CONNECTOR, BNC	E-354
CNJ14	1-509-131-11	CONNECTOR, BNC	E-354
CNJ902	1-508-382-00	CONNECTOR (10P)	E-352
CNP901	⚠1-509-546-00	3P INLET	E-353
F901	⚠1-532-259-00	TIME-LAG FUSE, T1.6A	E-303
F901	⚠1-532-557-00	FUSE, GLASS TUBE, 3.15A	E-303
L901	⚠1-425-922-41	COIL, DEGAUSS	E-55
L902	⚠1-425-922-41	COIL, DEGAUSS	E-55
L903	⚠1-452-214-21	PICTURE TUBE NECK ASSY	E-56
L905	⚠1-451-160-00	DEFLECTION YOKE (SY-97)	E-57

Ref.No	Part No	Description	Remark
Q901	8-729-311-42	TRANSISTOR 2SC1114	
Q902	8-729-311-42	TRANSISTOR 2SC1114	
Q903	8-729-311-42	TRANSISTOR 2SC1114	
Q904	8-729-341-34	TRANSISTOR 2SC1413A	
Q905	8-729-341-34	TRANSISTOR 2SC1413A	
R901	1-217-183-00	RES, WIREWOUND 2.7 15W	
R902	1-206-680-00	RES, METAL OXIDE FILM 4.7K 2W	
S901	⚠1-552-895-00	SWITCH, PUSH	E-152
S902	⚠1-552-896-00	SWITCH, PUSH	E-153
S903	⚠1-526-572-00	SOCKET, POWER VOLTAGE SELECT	E-301
T901	⚠1-446-358-00	TRANSFORMER, POWER	E-308
T902	⚠1-439-175-00	TRANSFORMER ASSY, FLYBACK	E-206
V901	⚠8-738-311-05	PICTURE TUBE, 33QVB22	E-58

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ACCESSORIES AND PACKING MATERIALS

Part No	Description	Remark
A-1475-425-A	PC BOARD BLOCK ASSY, Z	
♦:1-508-171-00	CONNECTOR, 10P	
⚠1-532-259-00	TIME-LAG FUSE; T1.6A	
⚠1-532-557-00	FUSE, GLASS TUBE; 3.15A	
⚠1-534-819-00	POWER CORD	
3-701-613-00	BAG, POLYETHYLENE	
3-701-623-00	BAG, POLYETHYLENE	
3-701-629-00	BAG, POLYETHYLENE	
3-701-630-00	BAG, POLYETHYLENE	
4-335-988-00	LABEL (B), VOLTAGE INDICATION	
♦:4-335-998-00	RAIL (L), GUIDE	
♦:4-335-999-00	BRAKCET, GUIDE RAIL	
4-337-201-00	BAG, PROTECTION	
4-337-204-00	CUSHION (LOWER)	
4-337-205-00	CUSHION (UPPER)	
4-337-207-00	CARTON, ACCESORY	
♦:4-337-214-00	NUT, PLATE	
4-347-104-00	INDIVIDUAL CARTON (BVM-1301P)	
4-351-102-00	INDIVIDUAL CARTON (BVM-1301PM)	
4-491-480-12	MANUAL, OPERATION & MAINTENANCE	
7-623-212-22	SW 5, TYPE 2	
7-682-160-13	SCREW +P 4x6	
7-682-179-01	SCREW +P 5x20	
7-688-005-01	W 5, SMALL	
7-700-731-03	DRIVER, VR ADJUSTMENT	

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

- =>: Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.

- Items marked " ♦ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

CAPACITORS
- MF : μF, PF : μμF

RESISTORS
- All resistors are in ohms
- F : nonflammable

COILS
- MMH : mH, UH : μH